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JPRS Report

Nuclear Developments

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JPRS-TND-90-021

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JAPAN

Construction of Nuclear Waste Facility Approved

OW1511031990 Tokyo KYODO in English 0149 GMT
15 Nov 90

[Text] Tokyo, Nov. 15 (KYODO)—The Science and Technology Agency formally approved Thursday the construction of a low-level radioactive waste storage facility in Rokkasho-Mura, Aomori Prefecture, officials said.

Agency Director General Tomoji Oshima handed over to Tadao Ogaki, president of Japan Nuclear Fuel Industries Co., Inc., a letter of permission for the construction of the facility that is expected to become the repository for some three million barrels of contaminated scrap and waste from nuclear power plants. The facility, which may begin construction by the end of November, will also include a uranium enrichment factory and a spent nuclear fuel reprocessing plant.

Local residents in the northernmost prefecture of Japan's main island Honshu, concerned about the contamination of underground water supplies, are expected to step up their opposition to the facility.

The storage facility will house in a special pit sealed barrels of waste and scrap such as gloves, overalls, and water contaminated with low-level radioactivity during operations in nuclear power stations. The facility will have to be administered for more than 300 years when the materials are expected to no longer be a radioactive hazard.

The initial phase of construction to be completed by December 1992 will create a facility that will be able to hold 200,000 of the 200-liter drums that will hold the discarded materials. Some 450,000 barrels containing low-level radioactive waste is already being held on site at nuclear power stations, but the Rokkasho-Mura site is expected to hold three million barrels when complete.

Japan Nuclear Fuel Industries submitted its proposal for the storage facilities in April 1988 and earned the approval of the Science and Technology Agency in February. Since then, the Atomic Energy Commission and the Nuclear Safety Commission have double-checked the proposals and on November 1 and 2 gave their approval to the facility.

Changes in the proposal's plans to prevent the contamination of underground water have delayed the project, but Japan Nuclear Fuel Industries hopes to begin construction by the end of the month. The uranium enrichment factory, which has entered the final stages of construction, is scheduled to begin operation next September.

The Science and Technology Agency is still considering plans for the fuel reprocessing plant which a separate firm will begin constructing late next year in time for it to begin operations in 1995.

Research Group Predicts Nuclear Power Increase

OW0911025290 Tokyo KYODO in English 1446 GMT
8 Nov 90

[Text] Tokyo, Nov. 8 KYODO—Japan's dependence on nuclear power plants in 2050 will likely increase to more than 40 percent of the total power generated, compared with 25.5 percent for Fiscal 1989, an industry research center predicted Thursday.

The Central Research Institute of Electric Power Industry forecast that if Japan goes ahead with the present power supply project and maintains the current power supply system, it would not keep pace with demand. The center thus suggested that nuclear power plants should be constructed on softer ground than rock. It also recommended the construction of offshore and underground N-power plants. The center also proposed a serious study on the possibility of "geothermal hot dry rock" power generation. Under that plan, water would be poured onto rock above hot magma, where it would be heated, then brought to the earth's surface to be harnessed into electric power.

The research center based the projection on its estimate that the Japanese economy will achieve an average annual growth of 2.5 percent in real terms between now and 2050. The nation's total energy consumption in that year is predicted to be 550-870 million tons, in terms of oil, and its electricity demand in that year at 1.2-1.8 trillion kilowatts hour, twice or three times the Fiscal 1989 level.

NORTH KOREA

USSR Reported To Stop Nuclear Aid to North

SK2010010590 Seoul THE KOREA HERALD
in English 20 Oct 90 p 1

[Text] Tokyo (Yonhap)—The Soviet Union has decided to stop supplying materials and technology for the construction of atomic power stations in North Korea until it accepts the international demands for on-site inspections of nuclear facilities, the KYODO News Agency reported Thursday, citing sources in Moscow.

The agency also said that Moscow is considering sending nuclear experts to Pyongyang for the inspections and the North will hardly refuse in view of North Korea's heavy dependence on Soviet nuclear fuel.

Under a treaty in 1985, the Soviet Union has so far supported the construction of nuclear power stations equipped with four generators, the report said.

SOUTH KOREA

Government To Rewrite Atomic Power Law

SK0711091090 Seoul *THE KOREA ECONOMIC JOURNAL* in English 5 Nov 90 p 5

[Text] The government will split the existing Atomic Power Law into four different laws for more effective control of atomic power and increased atomic power safety, according to the Ministry of Science and Technology.

The proposed four new laws are the Basic Atomic Power Law, the Reactor and Nuclear Materials Control Law, the Radiation Hazard Prevention Law and the Law on the Promotion of Development and Peaceful Applications of Atomic Power.

For increased atomic power safety, an Atomic Power Safety Commission will be organized separately from the existing Atomic Power Commission, ministry officials said. The new commission will supervise safety inspections of atomic power plants in the design stage, as well as of those in operation, among other things.

Opposition Grows to Island Nuclear Waste Dumps

SK0311060790 Seoul *YONHAP* in English 0558 GMT 3 Nov 90

[Text] Seoul, Nov. 3 (YONHAP)—The government has tentatively decided that an island off South Chungchong Province is the site to store radioactive waste from the nation's atomic power plants, but the citizens of Taejon and Chungchong Province say they do not want nuclear waste dumped on their doorsteps.

They warn that a part of Anmyon Island, a summer resort famed for a stunning 24-kilometer beach, will be transformed into an "island of death" if the government is allowed to dispose of nuclear waste on the island, destroying not only the ecology system but also the residents.

Islanders accuse the government of trying to wriggle out of its promise to develop Anmyon as a beachhead to promote exchanges with China and the advent of the "age of the west coast" touted by President No Tae-u during his election campaign.

Strong resistance has already scuttled plans to build a waste dump on the east and south coasts, and now a bid to set aside 3.3 million to 6.6 million square meters of Anmyon have run into the same problem.

The nuclear commission, an irregular gathering of cabinet ministers led by the deputy prime minister, will meet in mid-November to consider how to meet the government's goal of beginning construction in the latter half of next year.

Anmyon Island has been nominated as a national sea park and is listed in the government's development plan of national resort and tourism sites by 1996.

The total radioactive waste of the nation's nine reactors sites in 28,000 drums temporarily warehoused at each plant, but by 1993 or 1994 the makeshift warehouses are expected to hit capacity.

THAILAND

Minister Agrees in Principle To Build Nuclear Plant

91WP0032A Bangkok *THE NATION* in English 18 Oct 90 p B12

[Excerpts] PM's Office Minister Prasong Buranaphong, who is in charge of the Electricity Generating Authority of Thailand (Egat), yesterday said he agreed in principle with a long-running proposal to build a nuclear power plant in Thailand, especially at a time when the Egat is facing expansion and cost problems.

The minister said nuclear power plants, being opposed in the country for a long time, have more pros than cons as the cost of electricity production keeps rising. The Egat is currently facing higher costs because of recent oil price rises while the government said it has no policy to permit a rise in power charges. [passage omitted]

Prasong said the government could consider building a nuclear power plant in a far away place, such as an island, to ensure that the population is not affected while minimizing public psychological fears on the safety of nuclear plants.

Prasong said he would take a trip to the islands near Prachuab Kiri Khan to see if there is any appropriate site. If the government invests in a nuclear power plant project, he said, there will have to be safety precautions to prevent any possible health hazards which will be caused by radioactivity.

"Having visited plants in several countries, I believe that nuclear power for electricity supplies has more pros than cons," he said, noting that a project normally involves a large percentage of investment in safety areas.

The minister also suggested a public debate on the possibility of building a nuclear plant in Thailand. [passage omitted]

BULGARIA

IAEA Experts Criticize Kozloduy Nuclear Plant

AU2510192690 Sofia BTA in English 1829 GMT
25 Oct 90

[Text] Sofia, 25 Oct (BTA)—After two weeks of work, the inspection of the nuclear power plant in the town of Kozloduy carried out by the Osart minimission under an agreement between the Bulgarian Government and the International Atomic Energy Agency was completed today.

The experts checked up the exploitation, the technical maintenance and the repair of the 1000-megawatt generating unit 5.

The leader of the mission, Mr. Ferdinand Franzen, summarized the results and said that to make a fuller technical evaluation one should know the on-spot conditions of work and the life in Bulgaria in general and in Kozloduy in particular. "The conditions of life and work here resulted in an almost dramatic brain drain which poses a threat to the safe commission of Generating unit 6 and could possibly lead to forcibly closing generating unit 5 which is now serviced by a small number of senior operators and engineers. The labour hand available now can be encouraged to stay at their workplace and new experienced engineers, technicians and workers can be enrolled only by creating attractive conditions of life and work comparable to those in the other high technology and well developed industries," he said. "Besides while it is managed according to the principles of the morally outdated civil administration with its rigid rules for funds, structures, personnel and separation of the services (the production of electric power and heating) from the manufacturing costs (construction and exploitation of the equipment), the Kozloduy N-Plant cannot function as a modern industrial enterprise. The utterly complicated and inefficient organizational structures within the framework of the plant and the deformed distribution of power and responsibility hinder the application of modern methods and means of management, the optimal usage of resources, the establishment of productive contacts beyond the limits of the separate departments and workshops and the cultivation of a spirit of collectivism that would unite leadership and workers," Mr. Franzen went on to say.

The mission insists to adhere and to extend the recently adopted "open-doors" policy face to face with the international nuclear community and face to face with the broad public". The Kozloduy N-Plant in general and generating unit 5 in particular are obviously passing through a critical phase in their exploitation life. The seriousness of the situation should not be underestimated, things should be got properly under control through the resolution and the goodwill of all concerned and their ensuing coordinated action.

The report stating the results of the inspection will be submitted to the Bulgarian Government.

The date of the real Osart mission was specified: June 18, 1991. At that time inspection will be carried out of generating unit 5 according to the following plan: preparation and qualification of the personnel, radiation protection, chemistry, breakdown planning, organization, production and administration.

Kozloduy Staff Warn of Possible Nuclear Risk

AU1610151490 Sofia Domestic Service in Bulgarian
1400 GMT 16 Oct 90

[Text] An open letter addressed to the president of the Republic, chairman of the Council of Ministers, and chairman of the Grand National Assembly has been signed by 18 Bulgarian control room operators at the Kozloduy Nuclear Power Plant. The subject of the letter concerns the startup of the No. 6 power generating unit.

It is extremely likely that the hopes that the No. 6 1,000-megawatt unit will be brought into operation earlier are not justified, because there is no one to carry out the work. The matter is connected with the shortage of senior operating staff, a problem which has already been brought to the government's attention several times.

The normal, safe operation of the No. 5 and No. 6 units requires 50 operators, but at present there are only 18, a number which is sufficient only for operating one unit. Moreover, these staff are overworked and too fatigued, and have not made use of 1,184 days of their leave.

By a decision of the government, the Nuclear Energy Industry Trust hired 18 operators for two years from nuclear power plants in the Soviet Union. But the fact remains that a large proportion of the Soviet staff are dissatisfied with the living conditions in Kozloduy, and they need two to three months to familiarize themselves with the specific features of the power generating unit. Apart from this, up to 1 January Bulgaria will pay an average of 3,543 transferable rubles per operator, and after this date the payments will be made in foreign currency.

Are all the possibilities exhausted for training and appointing Bulgarian operators and for sending home the Soviet staff working at the Kozloduy Nuclear Power Plant? asks the letter.

The 18 operators are categorical in declaring that whereas the commissioning operations so far have been carried without nuclear fuel in the reactor and only with the help of expensive equipment, the state of affairs will change after the core has been charged with fuel. Sooner or later, a nuclear risk will ensue. Under these conditions, the startup of the No. 6 unit will constitute a crime. We are duty bound to declare this, and we do not want a second Chernobyl, the letter states.

ARGENTINA

Former CNEA Head Supports Nuclear Dump Idea

PY1211193090 Buenos Aires DYN in Spanish
1322 GMT 11 Nov 90

[Text] Buenos Aires, 11 Nov (DYN)—Vice Admiral Carlos Castro Madero, retired, former president of the National Atomic Energy Commission (CNEA), has reiterated his opinion in favor of building a nuclear repository, provided it is "profitable for the country." The dump will be used to store waste produced in Argentina and other countries.

Environmentalists and CNEA technicians have engaged in heated debates and exchanged reciprocal accusations in the controversy over the construction of a "nuclear dump"—as it is usually called—in the Gastre area of Chubut.

The issue has even been discussed in Congress, where a series of projects aimed at prohibiting the import of toxic and radioactive industrial waste have been proposed due to the possible risk to the health of the people.

Castro Madero said he has "absolute confidence in the security of the technology" used in this field. He noted, however, that "no human activity is 100-percent safe."

He said that the area where the preliminary studies were conducted may prove to be inappropriate "in view of a large geological fault which is active enough to necessitate the selection of another site" out of the 197 that were considered appropriate for this use.

One of the most controversial aspects of the issue has to do with a series of charges made by the ecological group "Greenpeace," which alleged that Argentine officials were involved in negotiations to import radioactive and toxic waste from a French company which would pay some \$135 million for the service. Although national authorities rejected this possibility, it could happen in the future if laws prohibiting this type of transaction are not promulgated, the ecologists asserted.

Castro Madero said it would be "acceptable" to receive waste from abroad. "Such a possibility should not be rejected without a detailed analysis of its advantages and disadvantages," the former official said. He added: "If we can store our own radioactive waste, we can do the same with waste received from abroad."

Castro Madero based his remarks on the scant supply of appropriate nuclear waste dumps and the huge demand that exists in the main countries of the developed world, which have not resolved the problem.

Congressmen are divided over the advantages of constructing a dump site, but they all agree that Argentina should not receive waste from abroad.

At the same time, ecologists are inviting officials and congressmen to think about the developed nations' lack

of interest in constructing waste dumps in their own territory, despite the fact that they have longer nuclear histories. This problem is like a boomerang because "now they do not know what to do with their waste."

Some nations are apparently ready to receive this nuclear waste in exchange for the cancellation of some of their foreign debt.

The nuclear waste problem has still not been entirely solved. Some waste is buried in temporary underground dumps, and some countries dump theirs into very deep areas of the ocean. There are also other countries, Sweden for example, where the inhabitants have decided through a plebiscite that existing nuclear plants must be gradually dismantled and the construction of planned facilities canceled.

BRAZIL

Details of Uranium Shipment From PRC Described

PY0111164890 Sao Paulo VEJA in Portuguese
31 Oct 90 p 2

[Text] Brazil has been developing its parallel nuclear program since the 1970's. Revelations about this program have been going on for some time. For instance, everyone knows that behind the scientific objective of mastering nuclear technology, there was a secret plan to build atomic bombs. It is also public knowledge that the borehole at Serra do Cachimbo, Para State, which President Fernando Collor ordered closed last month, was for nuclear tests. Everyone also knows that the Brazilian Government was investing much more in the parallel program than in its cooperation agreement with the FRG, for which only meager resources were earmarked. The great mystery has always been when, how much, how, and who supplied Brazil with the enriched uranium it needed for its research.

These questions were answered last Friday [26 October] at a top secret hearing held by the Chamber of Deputies CPI [Congressional Investigative Committee], which is investigating the parallel nuclear program. Testifying at the hearing were General Danilo Venturini, National Security Council secretary during Figueiredo's government, and Rex Nazare, former chairman of the National Commission for Nuclear Energy. Venturini and Nazare only made these revelations after demanding that the hearing be held behind closed doors and only for the committee members, who promised to keep the revelations secret. Two days after the hearing, two of the seven committee members revealed to VEJA that China supplied enriched uranium to Brazil early in the 1980's.

The CPI learned that the enriched uranium arrived on the same day, in three shipments totaling 200 kg. General Venturini said the uranium had different degrees of enrichment: three, seven, and 20 percent. He made it clear that only senior officials of the military ministries

were aware of this operation. To comply with a clause in the contract signed with China, the shipment had to be kept a complete secret. A deputy who attended the hearing said: "We were not told what our country had to give in exchange for the mineral."

The Chinese uranium was the starting point for the parallel program, and for this precise reason, this operation was treated as top secret. With this uranium, Brazil began to research the entire enrichment process—first, in the laboratories of the Institute for Nuclear and Energy Research at the University of Sao Paulo and later, at the Aramar Center, in Ipero, Sao Paulo State. Today, Venturini said, Brazilian researchers are capable of enriching uranium to 20 percent. He said: "We sought alternative sources of uranium because of the nonproliferation treaty, which banned access to nuclear technology by developing countries." He added: "On the one hand, there were countries that could do anything in the nuclear area, and on the other, countries that could do nothing at all."

The parallel program has become a notorious example of the squandering of public funds, and a prime example of this type of irresponsible action is the construction of the Cachimbo borehole, which was begun in 1980 and cost \$1 million. It was suddenly discovered that there was an aquifer at the bottom of the hole. Venturini said the hole could not be used for nuclear tests because it could have spread radioactivity to large portions of the Amazon jungle. It could not even be used as a nuclear waste dump. A major revelation that was made during the hearing was the fact that the highest percentage of enrichment for the uranium sent by the Chinese was only 20 percent, a level that is much lower than that required for a bomb—that is, more than 80 percent.

Figueiredo Justifies Military Research

91WP0022C Sao Paulo FOLHA DE SAO PAULO
in Portuguese 4 Oct 90 p A-7

[Text] Rio de Janeiro—Former President Joao Baptista Figueiredo, 72, during whose administration implementation of the parallel nuclear program was begun, insisted yesterday to FOLHA DE SAO PAULO that he was convinced he did "what was right" in relation to the Brazilian nuclear program. He justified the military research by declaring that Brazil cannot continue to lag behind other countries in the area of nuclear energy. Figueiredo made these statements while waiting in line to vote yesterday morning in Nogueira, district of Petropolis (in the mountainous region approximately 80 kilometers from Rio).

Concerning President Collor's assertions that there were military projects whose aim was to make the atomic bomb, the former president's only comment was: "Let him speak. He knows more than I do about this matter. He has studied it more than I have." On 18 September, Collor symbolically sealed the borehole that between 1980 and 1981 was constructed in the Serra do

Cachimbo—in an area administered by the Ministry of Aeronautics—for nuclear tests.

"There was never any talk of an atomic bomb," the former president said, adding that nuclear research should not be confused with the manufacture of the bomb. To emphasize the importance of nuclear energy, Figueiredo cited the example of France, the country that has the largest number of nuclear power plants in operation and is continuing to build them.

Former President Figueiredo 'Imported' Uranium

PY3110185590 Sao Paulo FOLHA DE SAO PAULO
in Portuguese 27 Oct 90 p A-4

[Article by Regina Eleuterio]

[Excerpts] Federal Deputy Anna Maria Rattes yesterday stated that the Commission for Congressional Investigations [CPI] has received a report that former President Joao Baptista de Oliveira Figueiredo assumed direct responsibility for the uranium that was imported in 1983, outside international safeguards, for the parallel nuclear program. [passage omitted]

FOLHA DE SAO PAULO tried to contact the former president, but he could not be found. On 3 October, before voting in Petropolis (66 km from Rio de Janeiro), Figueiredo told this newspaper he was convinced he made the correct decisions in the nuclear sector. According to him, military projects have served to master the uranium enrichment cycle.

Physicist Aquilino Senra, who was a member of the delegation organized by the CPI to inspect the (Navy) Aramar Experimental Center in Sao Paulo, said that it is important to know the degree of enrichment of the uranium imported by Brazil. Another doubt is whether uranium was imported more than once.

Senra said: "A reactor like that of the IPEN (Institute for Nuclear and Energy Research) uses 220 kg of uranium enriched to approximately four percent." He added that uranium enriched to a maximum of 20 percent can operate a research reactor. Above that it is used only for military purposes. To make an atomic bomb, the uranium must be enriched to more than 90 percent.

Rattes noted that within two or three weeks the CPI will visit the Army Technological Center (Cetex) in Rio de Janeiro. The CPI will then visit the Air Force installations in Sao Jose dos Campos. "Our objective is to create an institutional mechanism that will oversee the military projects and create in Brazil a single nuclear program," she said.

Former President Confirms Uranium Purchase

PY1411124890 Rio de Janeiro Rede Globo Television
in Portuguese 2200 GMT 3 Nov 90

[Text] Former President Joao Figueiredo has confirmed that Brazil bought enriched uranium outside the nuclear

accord signed with the FRG. This information is included in a note that Figueredo sent to the Congressional Energy Committee. In the note, Figueredo explained that for health reasons he would be unable to report to a committee meeting in Brasilia. Figueredo said that he endorses the statement by General Danilo Venturini, who was the chief of the military household in his administration, and that he has nothing to add on the subject.

Attorney General To Investigate Activities

91WP0022D Sao Paulo GAZETA MERCANTIL
in Portuguese 12 Oct 90 p 7

[Article by Cide Castro: "Attorney General Will Investigate the Nuclear Activities"]

[Text] Brasilia—The Office of the Attorney General of the Republic is going to investigate all the activities carried out in Brazil in the nuclear area. According to a directive disclosed yesterday by that office, a public civilian investigation has just been opened with the objective of "checking out to the fullest extent" the accusations that have been made by the media concerning the Brazilian nuclear project.

The opening of the investigation is in response to a representation made to the Office of the Federal Public Prosecutor by the Union for the Protection of the Natural Environment (UPAN)—an organization with its headquarters in Sao Leopoldo, Rio Grande do Sul—and subsequently endorsed by the Mato Grosso Ecology Association, headquartered in Cuiaba, Mato Grosso. According to Public Prosecutor Carlos Alberto Vilhena Coelho, who signed the directive, there is no "reliable and informative evidence" that the nuclear activity is being carried out "exclusively to attain peaceful objectives or with permission from the National Congress."

The attorney general's investigation will target the projects carried out by the Brazilian Navy—with supervision by the National Commission for Nuclear Energy (CNEN)—at the Aramar Naval Nuclear Center in the city of Ipero, Sao Paulo. According to the news reports that have been circulated by the media and that substantiate the representation made by the ecological organizations, a nuclear submarine is probably under construction at the center.

Congress May Assist Navy in Submarine Funding

91WP0026A Sao Paulo O ESTADO DE SAO PAULO
in Portuguese 23 Oct 90 p 12

[Text] The National Congress may help the Navy obtain funds from the federal government for the Autonomous Nuclear Program, whose objective is the construction of a nuclear submarine. Members of the Committee for

Congressional Investigations (CPI) who last week visited the installations of the Aramar Experimental Center at Ipero—125 kilometers from Sao Paulo—recognized that the technological advances already achieved make it advisable to continue the project. They decided to launch a movement in Congress in defense of Aramar, provided they receive guarantees that the activities carried out there will be continuously monitored.

Deputy Ana Maria Rattes (PSDB [Brazilian Social Democracy Party], Rio de Janeiro), will this week also receive from Rear Admiral Othon Luiz Pinheiro da Silva, chairman of the Coordinating Council for Special Projects (Copesp) and director of the Aramar Center, the schedule of the projects to be carried out during the next several years and the total amount of funding necessary. According to Pinheiro da Silva, \$376 million has already been spent on the project, and an equal amount will be required to continue the projects until 1995.

"The technological skills developed at Aramar are important for Brazil," Ana Maria maintains. "Aramar should not make the bomb, but all the rest that is being done there should continue," she insists. The deputy says she changed her mind after visiting the Experimental Center. "I did not imagine that it had made so much progress," she explains. According to another member of the CPI, Deputy Mauro Campos (PSDB, Minas Gerais), there is a consensus among the members of the committee on the need for Brazil to master nuclear technology. "We are convinced that it is essential for Brazil to put an end to its technological dependence," Campos insists. "In this respect, the nuclear program will have our full support," he says, but adds that "society, acting through Congress, must have protective mechanisms to ensure that this technology will be used solely for specific purposes."

According to Pinheiro da Silva, the activities planned for the Aramar Experimental Center include—for 1991—termination of the uranium-enrichment unit and school and the start-up of the first Brazilian propulsion turbine for submarines. Introduction of a course in materials engineering is scheduled for 1992, and construction of the Center for the Development of Steam Components and of the Laboratory for Naval and Oceanic Dynamics is scheduled for completion by 1994. The plants for the conversion and reconversion of uranium dioxide will be constructed in 1995, and the schedule calls for the pressurized reactor to go into operation in 1996.

Nuclear Agreement

German Minister of Research Heinz Riesenhuber announced yesterday that Brazil is prepared to negotiate adjustments in the nuclear treaty signed with Germany. According to Riesenhuber, who talked last week with President Fernando Collor, this adaptation of the treaty is necessary to ensure that the German technology will be used solely for civilian purposes.

Congress To Legalize Parallel Nuclear Program

PY0911153890 *Sao Paulo FOLHA DE SAO PAULO*
in Portuguese 4 Nov 90 p A15

[Report by Eumano Silva from Brasilia]

[Text] The Congressional Investigative Commission (CPI), which is probing the parallel nuclear energy program, will end its deliberations with the conclusion that the parallel nuclear program should cease to be parallel. Deputy Anna Maria Rattes (PSDB-RJ) [Brazilian Democratic Socialist Party of Rio de Janeiro], the CPI president, has said that the commission's final report will propose that the parallel program be institutionalized, possibly through a legislative decree. A legislative decree is a legislation document that is dictated by the Chamber of Deputies and the Senate, and is not dependent upon the presidential sanction.

The willingness of the CPI to institutionalize the parallel nuclear program became obvious during the session in which the director of the Navy Aramar Experimental Complex, Admiral Othon Luiz Pinheiro da Silva, was questioned on 31 October. Deputy Vivaldo Barbosa (PDT-RJ) [Labor Democratic Party of Rio de Janeiro] motioned that the CPI submit to a joint congressional session a proposal "to authorize" the operation of the Aramar complex. Barbosa said: "It was rewarding for the PDT to witness the nationalist climate prevailing in Aramar."

Deputy Anna Maria Rattes then affirmed: "We will institutionalize the parallel program; it will no longer be a parallel project."

The atmosphere of fellowship was summed up by Adm. Pinheiro da Silva's remark: "This is one of those happy moments in life, and my colleagues at Aramar will be proud of what happened here." This remark should be understood in the light of the criticisms that have been leveled at the parallel nuclear program since 1979 when it was created to develop projects toward the manufacture of an atomic bomb.

The parallel program's official name is the Autonomous Nuclear Technology Program (PATN). It was dubbed "parallel" because the PATN was not conducted under the nuclear agreement signed between Brazil and the FRG in 1974. One of better known activities of the PATN refers to the 350-meter deep hole dug in the Serra do Caçimbo early in the 1980's, which could have been used to test an atomic bomb.

FOLHA disclosed the existence of the hole in 1986. On 18 September 1990 President Collor travelled to Serra do Caçimbo to symbolically close the hole, which, according to the Strategic Affairs Secretariat (SAE), has never been used. This symbolic ceremony served as a backdrop to the pacifist speech delivered by President Collor de Mello before the UN General Assembly in late September.

The congratulations of the CPI to Adm. Pinheiro da Silva mostly referred to the mastery of uranium enrichment technology achieved in Aramar. Today, Brazil is technologically capable of manufacturing 100 MW nuclear reactors to supply electricity to cities of 200,000 people. The risk posed by the capability to enrich uranium lies in the fact that enriched uranium can be used to manufacture atomic bombs.

According to Adm. Pinheiro da Silva, with the ability to enrich uranium by the ultra-centrifuge method, Brazil has technologically moved beyond what could have been attained under the nuclear treaty with the FRG. The admiral reasserted that this technological jump justifies the creation of the PATN or parallel nuclear program. He also said: "Even though we have nuclear plants operating now, we cannot stop our research."

The capability to enrich uranium can also lead to the construction of a Brazilian atomic submarine. This possibility drew criticism from Deputy Jose Genoino (Workers Party of Sao Paulo) who was present at the CPI session. Later, Deputy Genoino said: "The Constitution only forbids the use of nuclear energy for nonpeaceful purposes, it does not forbid it for military purposes. However, once built, a military nuclear submarine can be used for nonpeaceful purposes at any time."

Campaign Against Nuclear Program Scored

'Disinformation and Unfairness' and Bomb

91WP0024A *Sao Paulo O ESTADO DE SAO PAULO*
in Portuguese 21 Oct 90 p 3

[Editorial]

[Text] The campaign being conducted both within and outside this country against the Brazilian nuclear program is fed by portions, not always equal, of justified concern, disinformation, and unfairness. We all had legitimate concerns while the scope of the program was nebulous, and poorly concealed by the veil of secrecy thrown over it by colonels who, ensconced in the Secretariat General of the former National Security Council, proceeded as if only they were capable of identifying the national interest, treating as enemies those who dared to disagree or simply exhibited curiosity. As early as the Figueiredo administration, however, a corner of the veil was lifted, and during the Sarney government the entire program came to light. Since then nothing has been changed, except by the Congress, which established constitutional limitations on the use of nuclear energy; by the Executive Branch, which curtailed the appropriations for the sector; and by the radical militants in the cause of nonproliferation, who make increasingly frenzied use of their flamboyant imagination.

Disinformation and unfairness are ingredients that complement each other. Very often they are the yeast of demagoguery and the fuel of a thirst for power. We must not forget that nuclear energy and power are inseparable terms of the same equation, whether the equation is that

of foreign policy, domestic policy, or the policy of groups that flail away at each other in maneuvers designed to build up influence. Whatever purpose they pursue, disinformation and unfairness unite to determine that everything that is done is spurious and no guarantee is sufficient, except unconditional surrender—to what or to whom we do not know—and this, as THE NEW YORK TIMES tells us, means signing of the nuclear nonproliferation treaty and abandoning independent nuclear research projects.

It was not enough, for example, that President George Bush had convinced himself, after consulting with his advisors, that the supercomputer sought by Embraer would be used in aircraft and aircraft parts design. Alleged specialists on Brazil immediately tried to veto the transaction by claiming that the equipment would be used to design the Brazilian atomic bomb and the rocket that would carry it. In a final move, a senator from Wisconsin submitted an amendment to a budget appropriations bill banning the sale of supercomputers to countries that had contributed—even by the individual action of any of its citizens—to the buildup of the Iraqi war machine. Fortunately, common sense prevailed and the amendment has just been defeated in committee, which sends back to President Bush the final decision as to whether to sell that type of data processor.

It is important to stress, however, that Brazilians actively supported this attempt to keep Brazil from obtaining equipment that is in the vanguard of technology and indispensable to the development of certain projects and designs in the aviation, petroleum, and precision machinery industries, to name just a few. All this in order to support a campaign whose purpose is to prevent the building of a bomb that everyone associated with the nuclear program say will not be built, that the Constitution prohibits, and for which this country has neither the technology nor the financial means to build. The result of the campaign is to demoralize our officials—whose word is repeatedly questioned—and to discredit this country. As we said some days ago, Brazil has become the sacrificial lamb.

Now THE NEW YORK TIMES, usually well-informed about Brazil, joins the campaign, using arguments that would be ridiculous were it not for the fact that it furnishes a respected forum for false rumors that have been repeated to excess, and arrogantly intends to put Brazil and President Collor de Mello under the protective custody of its editorial writers. There is no other way to interpret this unfortunate passage: "The United States can help Mr. Collor nudge (away from the nuclear program) his fractious military along by suspending sales of supercomputers the military badly wants." Fortunately, reactions in high government circles in Washington have been calmer and better-informed.

The existence of "a fractious military" is as fanciful as the insinuation, which follows, that Brazil is making the bomb. THE NEW YORK TIMES editorial reveals a surprising ignorance in going so far as to suggest that

President Collor de Mello "has called for a ban on nuclear tests (sic), even for peaceful purposes, across Latin America." The East Coast editorial writer is unaware that Brazil and Argentina are so concerned about nonproliferation (although not in the terms desired by the Americans and by radical Brazilian ecologists) that they have signed an agreement imposing safeguards on all nuclear material and technology that they export.

The shouting match against the Brazilian nuclear program—there is no longer any reason to call it the "parallel" program—does not end there. The minister of research for Germany has just visited Brasilia to try to renegotiate the German-Brazilian nuclear agreement. As part of the package, he seeks to obtain dollars from the completion of the Angra 2 and Angra 3 power plants, and political dividends from clauses that, by encompassing material produced using the equipment acquired under the agreement, would put the *entire* program under safeguards, even the part carried out by Brazilian scientists with Brazilian funds. This proposal, presumptuous as it was, received an unqualified response from Secretary of Technology Jose Goldemberg: "Safeguards will be accepted by Brazil only with regard to the new topics associated with nuclear development, and not in relation to the existing accord."

Disinformation and unfairness do not stop there. The Morro de Ipanema Ecological Unit attached a report to the petition which it is forwarding to the Environment Trusteeship for Sorocaba, seeking the shutdown of the Aramar Experimental Center, showing that the Sorocaba region suffered a mild seismic shock 120 years ago in 1874 and that, therefore, it is risky to permit nuclear facilities in the area. As we said, this would be funny were it not such a serious matter.

Aramar Over Seismic Epicenter

91WP0024B Sao Paulo O ESTADO DE SAO PAULO
in Portuguese 19 Oct 90 p 15

[Text] The Aramar Experimental Center in Ipero, 120 km from Sao Paulo, was built on top of a seismic epicenter, according to a study made by the Institute of Technological Research (IPT). The report was attached by environmentalists to its petition that will be delivered today to the Environment Trusteeship for Sorocaba in an attempt to close down the center. Aramar has facilities to enrich uranium and develop reactors for nuclear submarines.

"We want to paralyze Aramar and demilitarize the nuclear program," argues Gabriel Bitencourt, president of the Morro de Ipanema Ecological Unit. The IPT data were gleaned from Brazil's first map of seismic risks, made by geologist Jose Augusto Mioto. "The Sorocaba region recorded an earthquake in 1874," says Mioto. "It was a mild shock, with an intensity of five, that did not cause any damage to the buildings." According to Mioto,

a similar tremor would not pose any threat to Aramar. "It is impossible to know whether the region might suffer a more severe shock."

Environmentalists are also planning to submit to the court an opinion in which the State Secretariat for the Environment (SEMA) recommends that another environmental impact study be made.

Another criticism leveled by environmentalists is that, under the Constitution, any expansion of a project involving nuclear energy must be submitted to the National Congress. "I do not believe that buildings need the authorization of Congress," said physicist Jose Goldemberg, national science and technology secretary. Goldemberg did not want to express an opinion on the objections of the environmentalists without first examining the studies on which they were based.

A congressional investigative committee (CPI) from the Chamber of Deputies will make an inspection visit to Aramar today. The committee will investigate the Navy's autonomous nuclear program, which is accused of developing the atomic bomb.

Civilian Control of Entire Program Urged

91WP0022A Sao Paulo O ESTADO DE SAO PAULO
in Portuguese 13 Oct 90 p 3

[Text] Professor Jose Goldemberg, secretary of science and technology, told THE NEW YORK TIMES in an interview that Brazil does not intend to continue the research that could lead to the production of an atomic bomb. After he was informed in a confidential report of the intention to achieve the bomb, President Collor de Mello ordered the cessation of the project, known as "Solimoes," which certain sectors of the armed forces had been developing since 1975. The interview with the secretary merely confirms what the president of the Republic had already made clear by symbolic gestures and actions. He first symbolically sealed the boreholes drilled in Cachimbo which according to the report were to be used for nuclear experiments, and immediately thereafter declared at the United Nations that Brazil will not carry out any nuclear explosions. Both the president and his secretary emphasize one point: henceforth there will be the greatest openness possible in the nuclear program, whose principal component, the agreement with Germany, was negotiated in 1975 in the most absolute secrecy—without the knowledge even of the scientific community—and subsequently ratified by the National Congress. This sort of thing has come to an end. Everything will be above board, not only the parallel scientific research program in the nuclear area but the program involving the construction of two nuclear power plants at Angra dos Reis. This policy of openness is very important and must be maintained from now on.

It was under a cloak of secrecy that very serious mistakes were made in the nuclear area. The first step in the entire process was the agreement signed with Germany, which held out the promise of technology transfers that would

enable us to achieve mastery of the complete uranium cycle—mastery that could lead to the bomb. Operating under this delusion—for everything Germany exported was subject to international safeguards—Brazil began the program, which has already consumed \$5 billion to date not counting interest charges and financial costs, which are expected to come to around \$2 billion. Moreover, at least \$2.3 billion is needed to enable the two nuclear power plants under construction to begin energy production—and that is an optimistic forecast.

A total of \$511 million has already been spent on the uranium enrichment program. Exactly how much has been spent on the parallel program is not known, but it is estimated that approximately \$400 million has been consumed by the work already done on projects that have in principle now been suspended by President Collor. His decision was a timely one, because a report already prepared by government technical experts had recommended the investment, by the year 2000, of no less than \$5.5 billion, consisting of \$3.5 billion for the completion of Angra II and III—which would generate nuclear power—and the surprising sum of \$2 billion on scientific research in the nuclear area and on the construction of reactors for the Army (plutonium) and a Navy reactor (for its submarine). These numbers are noteworthy because of the detachment of the authors of the report from the national reality of an extreme shortage of funds for the construction of simple hydroelectric power plants (the projects delayed for lack of cruzeiros represent at least 10 million kilowatts of installed capacity) and of the scarcity of funds for investment in the areas of education, sanitation, health, and housing. And this is not to mention the indispensable investment of \$3 billion per year to increase our petroleum production to one million barrels from 650,000 barrels, which—had it been done—would have spared us the crisis in which we now find ourselves.

President Collor is correct in taking over—and turning over to the scientific community and to civilian society—the Brazilian nuclear program in all its aspects. It will thereby be possible to exercise greater vigilance over what is being done—or being planned—and we will know if we are pursuing the nation's interests in accordance with its international commitments.

These proposals are too serious to remain outside the control of the president, the Congress, the people, and the scientific community.

Goldemberg Admits Military Project Cuts Possible

91WP0022B Sao Paulo O ESTADO DE SAO PAULO
in Portuguese 11 Oct 90 p 22

[Text] Jose Goldemberg, national secretary of science and technology, admitted yesterday in Rio the possibility of a reduction in the investments authorized for the nuclear projects carried out at military institutions.

Goldemberg made the statement during the commemoration of the 34th anniversary of the National Commission for Nuclear Energy [CNEN].

These military projects include the activities of the Navy's Aramar Experimental Center at Ipero, Sao Paulo, whose function is to enrich uranium for the construction of the first Brazilian nuclear submarine. Also included is the project for a graphite-moderated reactor being carried out by the Army Technological Center at Guaratiba, Rio de Janeiro, to which the secretary paid a visit in the morning. Another of the military projects seeks to process uranium through the use of lasers at the Aeronautics Technological Center in Sao Jose dos Campos.

The secretary emphasized that the reduction in investments will not be limited to these military projects. "These are not military projects per se," Goldemberg said. "They are nuclear projects carried out at military institutions." He said President Fernando Collor wants to establish internal safeguards that will make it possible to exercise complete control of all the nation's nuclear activities. A proposal is under discussion, he declared, to strengthen the control mechanisms of the executive branch and of Congress, and the Brazilian Physics Association will be able to participate in the control process.

Goldemberg disclosed that President Collor is studying the recommendations submitted by a research group formed and coordinated by the Secretariat of Strategic Affairs to define the orientation of the Brazilian nuclear program. When asked what the fate of the Angra II and Angra III nuclear power plants would be, the secretary said the decision is up to the companies that produce electric power. "It is these companies that must decide if they are going to use nuclear energy or build hydroelectric plants," he said.

Status of Ultracentrifuges at Aramar Discussed

91WP0026B Sao Paulo O ESTADO DE SAO PAULO
in Portuguese 20 Oct 90 p 12

[Unattributed article: "Brazil May Have Atomic Bomb Next Year"]

[Text] Sorocaba—The Aramar Experimental Center, organ of the Ministry of the Navy located at Ipero, 125 kilometers from Sao Paulo, already possesses the technical prerequisites for producing and enriching uranium in the quantity and grade necessary for making the atomic bomb. This categorical assertion was made yesterday by Rear Admiral Othon Luiz Pinheiro da Silva, chairman of the Coordinating Council for Special Projects (Copesp), to the members of the Committee for Congressional Investigations of the National Congress during an official inspection of the Center.

In practice, Aramar will not be in a position to make the bomb until next year, when it will have 958 ultracentrifuges enriching uranium to 20 percent. At the present time, Othon Pinheiro says, the enrichment is still five percent. There are today 48 ultracentrifuges in operation

and another 600 in the process of installation, with an additional 310 scheduled for installation in 1991.

The Brazilian Government has undertaken a commitment not to make the atomic bomb, and has promised that the civilian authorities will henceforth exercise total control over research by the Armed Forces in the nuclear sector. This promise—made by Secretary for Science and Technology Jose Goldemberg—was highlighted yesterday by the Paris evening newspaper LE MONDE. The secretary also promised to open all the Brazilian nuclear installations to the press, members of Congress, and scientists.

Inquiry

Marco Antonio Vargas Pereira, curator of the environment for the judicial district of Sorocaba, is going to institute a public civil inquiry to ascertain the truth of allegations of unsafe conditions and deviation from authorized purposes at Aramar. According to the formal complaint, the basic objective of the Center—the construction of submarines—violates the Constitution, which forbids any nuclear activity for military purposes on the national territory.

Rear Admiral Othon Luiz Pinheiro da Silva, who is in charge of the Center, said yesterday that he does not fear the judicial inquiry. "All our installations were approved by the competent governmental entity, and we are acting in accordance with the Constitution," he declared.

Uranium Deal Called 'Clean,' 'Sound,' 'Legal'

PY0811152190 Sao Paulo FOLHA DE SAO PAULO
in Portuguese 4 Nov 90 p A 15

[Report by "E.S." from the Brasilia bureau]

[Text] Aramar Experimental Complex Director Othon Luiz Pinheiro da Silva, 51, has said that the importation of enriched uranium was a "sound" and "clean" deal, but he denied knowing where the material came from. Pinheiro held a news conference after giving his testimony before the CPI [Congressional Investigative Commission]. The admiral said that he did not know if Brazil had the technological know-how to build an atomic bomb. Pinheiro said that the Constitution forbids the use of atomic energy other than for peaceful purposes and that this principle should be respected.

FOLHA: Can Brazil build a bomb?

Pinheiro: I do not know. I am not a bomb maker. I only know that we have the know-how to enrich uranium. I have never studied the problem of the bomb, but it must be something very complex. It is like making a cake. You need eggs, baking power, and other things. I do not know if we can build a bomb. We control one of the elements—perhaps the most important—because we can enrich uranium. It is important to note, however, that the Constitution defines our national objectives quite clearly, and we have to respect the Constitution.

FOLHA: Can you confirm that Brazil imported uranium from the PRC at the beginning of the 1980's?

Pinheiro: I cannot confirm anything. You will have to ask the CNEN (National Commission for Nuclear Energy). I received the material from the CNEN. The Commission did not want research in the country to stop. I am sure the CNEN explored all possibilities for importing the material. The source is not my business.

FOLHA: How much uranium did you receive?

Pinheiro: At the time we were building that reactor [not further identified] we did not have the money to expand the centrifugal system. We received 220 kg for use in our research reactor. We were still developing the appropriate technology at that time. It was a small amount, and there was no reason for any uproar over it. Some people said that the deal was clandestine, but everything was clean and legal. The CNEN purchased the material that we needed in a clean and sound deal. It was a research tool for students.

FOLHA: What is the power of that reactor?

Pinheiro: Practically zero. It is only used for research purposes.

FOLHA: And the reactor that is still under construction?

Pinheiro: It is an 11-megawatt reactor, and it is also used for research.

Nuclear Decontamination Techniques Being Developed

PY0711222590 Rio de Janeiro O GLOBO in Portuguese 3 Nov 90 p 14

[Article by Fanny Zygband]

[Excerpts] Sao Paulo—There could soon be a way to decontaminate water used in large centers like Sao Paulo and Rio de Janeiro, which are facing ever-increasing water supply difficulties. This technology would make it possible to recycle water for human consumption. Pioneer studies on nuclear decontamination techniques are being conducted in Brazil by scientists of the Institute for Nuclear and Energy Research (Ipen) and the USP [Sao Paulo University] Polytechnic School Hydraulic and Sanitary Engineering Department.

Nuclear technology, like that being used in Japan, the United States of America, and Germany—countries that have installed pilot plants—is also being considered as a promising alternative for treating the industrial effluent and polluting sludge produced by conventional chemical and physical treatment processes. In Geiselbullach, Germany, scientists have a pilot plant that serves 240,000 people. Two similar projects have also been installed in Boston and Florida in the United States.

In the Brazilian study, the decontamination is being conducted through the irradiation of water using a high-energy electron accelerator—which is used in

industry, for example, to sterilize pharmaceutical products and change the texture of dyes. In Brazil, there are currently four electron accelerators of this type: one in the Ipen and three in different companies. [passage omitted]

According to Civil Engineer Dione Mari Morita, the project coordinator at the USP the principal advantage of this method is that the substances that do not naturally degrade are completely destroyed, whereas other methods just remove the substances from the water and release them into the air or the soil. As soon as the technical studies are completed, the Ipen and the USP will initiate an economic feasibility study.

Commission Visits Army Nuclear Laboratory Complex

PY1011230490 Rio de Janeiro Rede Globo Television in Portuguese 2200 GMT 9 Nov 90

[Text] The last secret in the parallel nuclear program has been disclosed. A commission of national deputies and scientists has visited the Army's nuclear laboratories in Rio de Janeiro.

The Army's nuclear installation sits on a 25-square-kilometer area in the Guaratiba lowlands, in the western part of Rio de Janeiro. Here, the Army built a complex of laboratories that were considered secret until today. The Army has been conducting nuclear research here since 1986, and there are currently about 140 people, both civilian and military experts, working at the installation.

The most advanced piece of equipment is an atomic pile, a sort of pre-reactor that does not produce plutonium. The Army has ready a project to build an experimental irradiation reactor, REI. It can be built in three years at a cost of \$35 million. This reactor can produce plutonium, the material for atomic bombs.

[Begin recording] [Unidentified reporter] Is there a possibility of building an atomic bomb?

[Unidentified official] Of course there is that possibility, but the intention to manufacture an atomic bomb does not exist. It is obvious that knowledge can be gained through research. Now, your question specifically refers to the bomb, and my answer is that there is no intention whatsoever to manufacture it. [end recording]

For the first time today, these laboratories were opened in order to allow deputies on the Congressional Investigative Commission [CPI] to inspect them. This commission is probing Brazil's parallel nuclear program.

[Begin recording] [Reporter] The deputies and the scientists accompanying this commission asked the military personnel more than 20 questions about the objectives of the Army's nuclear program.

[Deputy Anna Maria Rattes, CPI president] Our presence here, with this CPI, is intended to enforce the

Constitution. I have absolute certainty that today, the Brazilian Government, the Armed Forces, and Congress have the political will to abide by the nation's Constitution. [end recording]

CHILE

Cardoen FAE Bomb Said in Initial Stages

91ES0168A Madrid *EL TIEMPO* in Spanish
29 Oct 90 pp 47-53

[Article by Fernando Rueda: "Defense Ministry Knew About Sale of Spanish Bomb to Chilean Trafficker"]

[Text] Chilean arms dealer Carlos Cardoen confirmed last week that he is working with the Spanish firm M.S. System on the development of the lethal FAE [Fuel Air Explosive] bomb. The Defense Ministry was aware of this business relationship, which *TIEMPO* uncovered last week.

The Defense Ministry had all of the data on the contract that the Spanish firm M.S. System signed with Chilean arms trafficker Carlos Cardoen, a contract that led to the sale of deadly FAE bombs to Saddam Husayn's regime.

CESID [Defense Intelligence Service] is in possession of the data on the sale of Spanish technology to Carlos Cardoen so that he could transfer it to Libya and from there to Iraq. Military espionage is charged by law with monitoring Spain's defense industry in order to prevent, among other things, certain technologically advanced Spanish weapons from reaching countries on the black list. The FAE bomb is among the weapons that cannot be exported to any country, and Iraq is a nation that the Socialist government has prohibited from receiving any of our arms. In spite of all this, as *TIEMPO* revealed in an exclusive last week, Iraqi leader Saddam Husayn will have Spanish weapons available for use against likely Israeli targets in the event that Western forces try to recover Kuwait.

Last week Chilean industrialist Carlos Cardoen confirmed through his official spokesman that he and the Spanish company M.S. System are looking into the possibility of developing and producing the FAE bomb in Chile. Ismael Vicuna, the general manager of Industrias Cardoen [Incar], said that the August explosions in Chile's Atacama Desert were tests of the MK82 and MK83 bombs, their purpose being to "compare their pressure curve with that of the FAE bomb."

Preliminary Stage

Cardoen's spokesman asserted that the new bomb has not been developed: "It is in a very preliminary research stage, so it is not in production or under development or even in prototype." The bomb that Vicuna is talking about is the one that they want to develop on the basis of the Spanish FAE bomb, but he did not mention the sale of the Spanish weapon, which has already been completed, Jorge Faundes reports.

According to the various sources that this magazine consulted, the Spanish connection in this multimillion-dollar arms deal has its origin in Explosivos Alaveses (Expal), a company headed by Eugenio Muniz and whose manager is Manuel Gurrea. The company specializes in the manufacture of aerial bombs, artillery, and mines. In recent years its financial performance has been very satisfactory, because, according to the official version, it has had major multiyear contracts. Nevertheless, its current strength is not unrelated to the fine management that it has had in the 1980's, as several interesting "products" have combined with an intelligent international policy.

Middleman

Thanks to this combination Expal's stock rose sharply, and its weapons became notorious. Gomez Ulla Hospital in Madrid can provide strong evidence of this, as a number of individuals wounded by Iranian chemical weapons spent several months there. Spanish Army Colonel Manuel Dominguez Carmona visited Iran as part of a UN mission and saw for himself that the bomb containers belonged to Expal.

The company is now again in the news. It is the only one in Spain that has FAE bomb technology, because M.S. System, according to all of the circles we consulted, is an altogether unknown company that could not possibly, on its own, have the facilities for producing a bomb that only four countries in the world have.

For this reason, various sources feel that Expal could have used M.S. System as a middleman in selling the weapon abroad. In this case, Expal would have no legal liability, even if the channel used to export the bomb overstepped the bounds of the law.

According to the experts that this magazine consulted, this approach is customary, not exceptional in this type of deal. When arms companies, both state-run and private, think that they can do business with countries that are on the black list, they contract the services of middlemen and wash their hands of the transaction. At times the middleman companies themselves take the initiative, as their job is also to seek out buyers who cannot use legal channels.

M.S. System is the least known of such companies. Others, however, such as Gamesa and International Technology, which are similar to it, are very popular in arms-trafficking circles. According to investigators like Vicenc Fisas, the two companies have helped weapons manufacturers such as Santa Barbara to violate international embargoes. Some of these firms are in the habit of changing names, even every year, to prevent monitoring by intelligence services and to avoid investigative journalists. International Technology Equipment (ITESA) is headed by Luis Escalada Ruiz, who is among the most knowledgeable of men when it comes to the international arms trade.

Official Expal sources have officially denied that their company has contacts with Chile in general and with Carlos Cardoen in particular. They claim that "we're competitors and we have neither an accord nor pacts nor contracts."

Besides denying that they manufacture chemical weapons, they denied having ties with M.S. System. An investigation of this company revealed that no one knew of its existence and that it does not even appear in the business register.

Official Silence

The Defense Ministry is apparently not worried about the existence in Spain of a program to research bombs as lethal as the FAE or about their turning up in Iraq. Although Minister Narcis Serra initially acknowledged that work may have been done in this field in Spain, his only concern later was to deny that this was a nuclear weapon.

Defense Minister Narcis Serra feels that there should be no mention of the most secret programs and starts changing the subject when asked about them. Nevertheless, he has not gone so far as to deny the obvious: that the government-run National Institute of Aerospace Technologies monitored the tests that Explosivos Alaveses conducted in Spain on the FAE bomb; that the General Directorate of Weapons and Materiel (DGAM) contributed 48 million pesetas to the research into the weapon, and that the Defense Ministry itself handed over 125 million for its manufacture.

The government and its defense minister, Serra, have not explained either why they allowed the technology of a weapon paid for with public monies to leave Spain through "far from customary" channels.

Government sources have categorically denied that official permission to do business with Chilean arms dealer Carlos Cardoen has anything to do with the release of Spanish hostages in Iraq, "because nothing has been given in exchange."

Investigating Cardoen

Sources in the General Directorate of Weapons and Materiel have told TIEMPO, regarding Cardoen's holdings in Spain, that they are aware of his share in Industrias Metalurgicas Estrategicas Cantabricas (IMECSA), which is headquartered in Pontejos, Santander. They assured us, however, that "there have been no official exchanges between DGAM and IMECSA for more than five years now."

Cardoen's company does not appear on the official list of businesses that work with the Defense Ministry, which means that it is not obliged to periodically furnish documentation on the jobs that it is doing and on its operations.

Moreover, it has not taken part in any public bidding in recent years, "and thus anything that it might be doing has nothing to do with us," the above DGAM sources add.

The fact that the Chilean arms merchant's Spanish company is not in the Defense Ministry's register has led Chilean circles to believe that it could be manufacturing components of weaponry, mainly cluster bombs, which Incar, Cardoen's parent company, sells all over the world and which have made him a multimillionaire.

Carlos Cardoen, who is as famous as Armenian trafficker Dino Seferian, is not a man with whom one does business by mistake. Although it is not known whether it was the Spanish or the Chilean company that began the negotiations, there can be no doubt that M.S. System knew perfectly well that the only way to place its product overseas was by utilizing Cardoen's international network.

These contacts have enabled it in recent years to market its weapons and those of its "friends" in every country that is at war and in those that have been blackballed internationally. It is no accident that it has stable commercial relations with companies in Spain, South Africa, Israel, Brazil, and Arab countries like Iran and Iraq.

Its name cropped up in the intrigue surrounding the sale of arms to Iran, part of which is known worldwide as the "Irangate" scandal, in which U.S. Lieutenant Colonel Oliver North was a principal.

Its relationship with Iraq has been much more lively. In recent years it signed an accord with Saddam Husayn for the construction of two weapons factories on the outskirts of Baghdad. One was to produce aerial bombs and the other, fuses. When Iraqi troops invaded Kuwait on 2 August, the factories had not yet been completed. A few details remained, but Cardoen wanted to halt work in order to avoid the international censure that giving official aid to Saddam Husayn would bring.

The Iraqi leader authorized the departure of all Latin American citizens but prevented seven Chilean engineers who were working in the factories from leaving the country until the projects were completed. It was vitally important to Husayn to have as many weapons as he could, and he wanted Cardoen to fulfill their business agreement.

Several weeks later, however, the seven Chileans were authorized to leave Iraq. Officially there was no quid pro quo. Cardoen knew that if his men helped to finish the factories, no country, Spain included, would do business with him again, not even under the table. It could have marked the end of the agreement between M.S. System and Incar, the arms dealer's company.

But Cardoen convinced Saddam Husayn to allow his workers to leave. What no one knows is what the arms seller may have committed himself to in exchange for the lives of his men.

BANGLADESH

AEC Offices To Be Moved to More Secure Area

91WD0154A Dhaka THE BANGLADESH OBSERVER
in English 30 Oct 90 p 10

[Text] Plans are underway to shift the Atomic Energy Commission (AEC) from its present location in the city to Savar, informed sources said in Dhaka on Monday reports UNB.

They said the Science and Technology Division of the Ministry of Education had already advised the AEC to remove all its files, papers, documents and chemicals to Savar, where the Commission has some establishments.

An earlier government move to shift the AEC to Savar, after the Dhaka AEC centre came under attack from political activists in 1987, did not work out because of resistance from its staff—most of whom preferred to stay in the capital.

The AEC, now located in the Dhaka University campus came under attack for the second time on 13 October when political activists damaged its office and set fire to vehicles parked in its premises.

AEC scientists said that fire could cause serious havoc because of the location of radioactive materials and other installations at the centre.

"We do not have the technology to check any radioactive hazard, AEC scientist warned.

INDIA

Work Progresses on Controversial Nuclear Plant

91WD0102A Bombay THE TIMES OF INDIA
in English 24 Sep 90 p 9

[Text] Kaiga, Sept. 23 (PTI)—Construction work on Karnataka's controversial Kaiga atomic power plant, set amidst the evergreen forests of the Western Ghats, is going on ahead of schedule despite the hue and cry raised by environmentalists over the safety of the plant, the state's first.

"The local people around Kaiga have no opposition whatsoever to the project coming up here but it is only a few environmentalists from far away places who have started the agitation," Mr P. Tewari, chief project engineer, told a group of visiting newsmen from Bangalore.

He said work on the fully indigenous Rs 730-crore project was being carried out adopting advanced safety designs.

Mr Tewari felt, "total lack of appropriate understanding was the sole reason" for the controversy surrounding the plant.

Mr Tewari said site for the nuclear plant at Kaiga was selected only after most careful consideration of all aspects of safety, environment and several other aspects.

The criteria included evaluation of factors like population density, agriculture and livestock, water usage, distance from towns and cities with large population, site geology and hydrology, seismic considerations, transportation of heavy and over dimensioned components and power demands.

He said the water from Kadra reservoir would be used in the nuclear plant for condenser cooling and would not come in contact with any radioactive fluid.

Mr Tewari also explained that the nuclear plant would have two fast acting automatic shutdown systems, one of them a standby. The shutdown of reactors occur as soon as any unacceptable deviation in operating parameters takes place during plant operation. Even under the most unlikely event of dual failure consisting of shut-down systems and emergency core cooling, any release of radioactivity from the core of the reactor would be contained within the reactor building and not released to the environment, he said.

He said there were five barriers to the radioactivity reaching the environment. The first barrier was 'uranium dioxide pellets' and the second, zircaloy cladding of the fuel. They were in turn housed in zircaloy pressure tubes. Even if these barriers were to break, the reactor was contained in two sealed concrete buildings forming double containment, constituting the last two barriers, he said, adding, with these provisions, the escape of radioactivity into the environment was "practically ruled out."

In addition to these provisions, Mr Tewari said special attention would be paid to meeting any emergency beyond the normal design basis accidents, which might arise. For the Kaiga project, a detailed emergency preparedness plan would be drawn up. This would lay down action to be taken by plant and local authorities and would be tested by conducting mock exercises from time to time.

Analysts Score U.S. Stand on Nonproliferation

Stand on Pakistan

91WD0134A Bombay THE TIMES OF INDIA
in English 16 Oct 90 p 12

[Article by Dilip Mukerjee]

[Text] Alarm bells should be ringing in India if the hitch in U.S. relations with Pakistan over its nuclear status were to be taken at face value. The reason they are not is because Washington has gone through this charade many times since 1977 when Pakistan's aborted bid to acquire a plutonium reprocessing plant from France alerted the world to its nuclear ambitions.

The United States has stringent laws to bar aid to countries suspected to be engaged in a weapons programme but they have always been subordinated to its strategic interests, most blatantly and outrageously in the case of Israel. U.S. estimates put Tel Aviv's stock of nuclear warheads at between 50 to 200, considerably more than five or ten thought to be in Pakistan's inventory and 40-60 that India is credited with.

Yet Israel is the largest recipient of U.S. military and economic aid. Even more deplorably, Israel is getting away with increasingly explicit warnings of nuclear retaliation. Washington, which is quick to condemn any Arab threats to Israel, has not found it necessary to deliver even a *pro forma* rebuke.

Intelligence Estimate

The United States has known since the autumn of 1986 that Pakistan is producing weapons grade uranium at Kahuta. As WASHINGTON POST reported, this was the considered assessment presented in a special national intelligence estimate circulated by the CIA chief as head of the U.S. intelligence community. Moreover, Mr. Reagan in 1988 and Mr. Bush in 1989 personally declared that evidence about Islamabad's continuing pursuit of weapons was making it difficult to give the certificate the President is required to provide annually that Pakistan does not possess a nuclear explosive device.

The certificate is due at the start of each fiscal year on 1 October. As in previous years, voices are being raised in Congress, notably by Mr. Stephen Solarz and Mr. John Glenn, that Pakistan must make fresh promises of good behaviour to qualify for a certificate. WASHINGTON POST has meanwhile editorially called for a termination of aid "cleanly and without regret." It is tempting to conclude from all this that nonproliferation concerns are now to the fore in the changed international environment. But this alas is not the case as evident from reports that the U.S. administration has been lobbying Congress for continuance of aid under a temporary waiver to give time to the regime that takes office in Islamabad after the 24 October election to respond to U.S. concerns.

The certificate has been delayed before. It was given in 1988 on 18 November, two days after the conclusion of the Pakistan's general election of that year. This precedent accounts for the speculation that Mr. Bush has the same sort of timing in mind this year. Possibly he wants to claim to the self-appointed U.S. champions of Pakistani democracy that he is using the leverage of the certificate to good purpose.

The stop-go sequence of aid to Pakistan began, as pointed out above, in 1977. Once France was persuaded to cancel the contract for the reprocessing plant, aid resumed in 1978. It was stopped again in May 1979 following revelations that Pakistan was secretly importing equipment for its Kahuta enrichment facility but Mr. Carter not only reversed the decision in the wake of the Soviet invasion of Afghanistan in December of the

same year but came forward with an offer of \$400 million in aid which Zia-ul-Haq shrewdly rejected as "peanuts."

Limit on Enrichment

When Mr. Reagan took over in 1981, Pakistan got a pledge of \$3.2 billion over six years, making it necessary to obtain a waiver of the Symington amendment which stood in the way of aid to a country developing unsafe-guarded facilities for producing weapons grade material. There was another hitch in 1985 when Pakistan was found to have breached the 5 per cent limit on enrichment set by Mr. Reagan in a letter to Zia the previous year. To save its conscience, Congress adopted the Pressler amendment requiring the President to certify each year that Pakistan had not put together a bomb. This meant that it would still be eligible if it was (as WASHINGTON POST put it) just two turns of the screw away from the final product.

Two years later, Pakistan was caught red handed in an attempt to obtain prohibited items for its Kahuta facility from the United States. An indignant Mr. Solarz slapped on another amendment barring continuance of aid if Pakistan was found to be making illicit imports from the United States. But he thoughtfully included an escape clause which allows the President to override the bar if he determines this is necessary in the national interest. To no one's surprise, Mr. Reagan did just that in January 1988 when a U.S. court gave a verdict that Pakistan was, despite its claims to innocence, indeed guilty.

Another hurdle had to be crossed when the Symington amendment waiver, extended for two and a half years to permit the second six-year aid package for 1988-93, was due to expire. It was extended in November 1989 for a further year and for yet another year as recently as June this year. Add to this telling evidence of U.S. permissiveness the fact that Congress approved in July/August last year the sale over four years of another 60 F-16's, a nuclear capable aircraft, of which Pakistan will have received 51 as part of the aid package by next year.

Aid to Pakistan is now being justified on grounds other than the country's relevance in the U.S.-Soviet context. The sale of F-16's at Ms Bhutto's request was said to be as much for helping her consolidate a democratic order as for meeting the country's legitimate security needs. As U.S. pundit Thomas P. Thornton pointed out in mid-1989, those in the United States who argue for scaling down ties with Pakistan following the thaw in American-Soviet relations would have to contend with the other side—especially within the military—who want to see the present level of cooperation not only maintained but enlarged. They are prepared to pay high costs, political as well as financial, to develop Pakistan as a reliable agent of U.S. policy in this strategic (South-West Asian) region.

In a more explicit analysis, Mr. Rodney Jones speaks of Pakistan's strategic usefulness as a country overlooking the Persian Gulf, and the military role the country can play in Gulf states to help them in maintaining their

security and coping with external pressures. This capability, demonstrated in the past by secondment of troops to Saudi Arabia and training teams elsewhere, is now even more important in the current context. Not surprisingly, the Gulf Cooperation Council of the oil-rich Sheikdoms wants Pakistan to take a permanent role in regional security arrangements alongside Egypt, Syria and Turkey.

Israel's Concern

Although Pakistan's potential contribution in the Gulf region does not weigh heavily enough with analysts like Mr. Thornton, they are very much in a minority. Although Israel's concern about Pakistan's Islamic bomb carries more weight, Islamabad's backers will still carry the day as they always have in the past.

A visiting U.S. state department official raised the issue whether the hitch over certification would add to New Delhi's anxieties about the nature of the Pakistani threat. No, it does not because Indian military planners have long assumed that Pakistan does indeed have a nuclear capability as Gen K. Sundarji said in an interview to INDIA TODAY in April this year. As he had said when he took over as army chief in February 1986, the government will ensure that the armed forces will not be made to fight in a disadvantageous position.

This remains the official stance as Mr. I.K. Gujral reiterated in the Rajya Sabha on 23 May last that all necessary measures are being taken to meet the threat arising from Pakistani efforts to produce a nuclear bomb. It does not of course suit India to be any more explicit. Nor does it suit the government to acknowledge publicly the progress being made at Kahuta because this would put it under great pressure to go public on countermeasures. Without doubt, equivocation is New Delhi's best bet for the present.

Regional Focus Noted

91WD0134B Calcutta THE STATESMAN in English
17 Oct 90 p 8

[Article by Aabha Dixit]

"The nuclear nonproliferation treaty will become more widely acceptable if the countries trying to enforce it abandon a selective approach which fails to take regional factors into account," says Aabha Dixit, a research officer at the Institute of Defence Studies and Analyses in New Delhi. These countries should also renounce "the belief that these weapons represent the currency of power and the aura that goes with them."

[Text] An emerging focus in U.S. policy on nuclear proliferation is towards its regional containment. It is a significant change from the earlier policy that stressed a purely technical approach to containing the horizontal spread of nuclear weapons. The failure of the technology denial policy is evident from the search for alternatives in containing what U.S. scholars call "problem countries" like Pakistan, Israel, South Africa and India.

Issues relating to the control of sensitive nuclear and missile technologies on the subcontinent are being supplemented by ways to "manage the South Asian nuclear arms race through a regional verification regime." Regional verification is the new buzz word for the nonproliferation cultists, who want to preserve the NPT in its present form, but at the same time want to ensure that the nuclear threshold is not crossed by nonnuclear weapon countries who have not joined the treaty.

New Thrust

A report, "Towards a Nuclear Verification Regime in South Asia," prepared by the University of Illinois at Urbana for the Los Alamos National Laboratory in the United States under the guidance of the South Asian expert, Stephen Cohen, reflects this new thrust. The report explores the possibility of "attractive alternatives" to existing U.S. nuclear nonproliferation policies. In a frank acknowledgement that such policies have been less than successful, the report has attempted to look at the issue from a different angle. While the regional dimension of the U.S. nonproliferation policy continues as before, the question asked is "what combination of political agreements and technical arrangements would make it possible for India and Pakistan not to go nuclear."

Proliferation as an issue has become a pressing concern for both the United States and the USSR at a time when the cold war seems to be dissipating into a new "condominium approach." In fact, a central expression of this new cohabitation principle has been the agreement to tackle the issue of proliferation in all its dimensions, as was reflected in the joint communique issued at the end of the Washington summit earlier this year. Nuclear proliferation, particularly in South Asia, is a top priority item among the several important proliferation-related issues on the anvil in the not-too-distant future. The final review meeting of the NPT will be followed by the expiration of the 1963 Indo-U.S. agreement on Tarapur in 1993 and the completion of the NPT's 25-year tenure. In between, the annual U.S. Presidential certification of Pakistan's nonnuclear status will provide the odd hiccup.

In an attempt to provide a new thrust to technical aspects, a political dimension has been inducted, which is clearly indicative of the fact that nuclear export controls have not been able to stem the progress of "Problem countries" towards self-reliance in nuclear technology. The present approach which emphasizes both regionalism and verification—either intrusive or otherwise—may offer new alternatives to existing policies on nonproliferation, but it is highly unlikely that they will cut much ice with New Delhi and Islamabad.

The reason is the persistent American failure in trying to formulate a policy that appears reasonable to the United States but looks woefully inadequate for the target countries. With New Delhi any regional approach is bound to

come a cropper for the oft-repeated reasons, and Islamabad may not find the idea of regional verification enticing enough as long as the U.S. strategic/global policy of trying to contain Chinese and Soviet influence in the region is enmeshed in its larger nonproliferation goals.

Old Wine

Attempting a purely nuclear related agenda of slowing down or controlling the nuclear development in the region, ensuring that India and Pakistan do not help the nuclear weapons programmes of other Third World nations, and seeing that the NPT is protected—measures which are to be pushed through a “undirectional” techno-political strategy—are merely attempting to serve old wine in new bottles. Fundamental issues of the superpowers’ legal obligations under the NPT to engage in “effective measures relating to the cessation of the nuclear arms race...and nuclear disarmament” and to “end all test explosions of nuclear weapons for all time” have not been taken into account. Similarly, any regional approach to nonproliferation cannot overlook the fact that the Indian Ocean “bristles” with nuclear weapons. Also glossed over is the relevance of China in any South Asian regional arrangement.

Technology is available to ensure that no state is able to produce the stealth bomb, but merely fine tuning the debate to use it for monitoring South Asia smacks of the same deficiencies that the earlier technology denial policy had. More than the legal loopholes, the iniquitous application of proliferation safeguards have brought the denial regime to grief. Unless a substantial change in the pattern of dealing with proliferation is brought about, all such attempts will have a very limited utility.

Despite the membership of 147 countries, the NPT must be modified to take account of the positions of the countries that really matter in the politics of nonproliferation. Any ad hoc attempts like that of the London Suppliers Group (LSG) must be done away with. To overcome the hurdles that nonproliferation faces, the nuclear weapon states also have the moral obligation of renouncing the belief that these weapons represent the currency of power and the aura that goes with them.

Nuclear Myth

Bilateral disarmament measures going beyond superficial reductions must be made within the multilateral fora so as to involve the entire world community in disarmament which can destroy the myth of nuclear weapons and their usability. Instead, the two superpowers have refused to make progress of the comprehensive test ban treaty—a proposal that enjoys almost universal support and which by far makes for a more plausible and genuine nonproliferation measure.

Stressing regional initiatives and assuming a straitjacketed South Asia is to ignore the earlier pitfalls. There is no doubt that South Asian proliferation represents a

major challenge to the legitimacy of the present international nonproliferation regime, which to the United States and the USSR has become symptomatic of their attempt to cooperate in determining the course of events on the international agenda. Merely by stressing the ascendancy of the political approach over the technical, and to look at South Asia as a region distinct from the rest of the world and impervious to extra-regional influences is to shut one's eyes to reality.

The proliferation of nuclear weapons is not an irreversible trend. Given the political will, as has been exhibited by the superpowers in containing the spread of chemical weapons, the nuclear issue, too, can be tackled effectively. An unrealistic and purely regional approach, which fails to comprehend the “dynamics of regional proliferation and local sensitivities,” will not receive serious consideration. Verification, as in the case of the proposed chemical weapons convention, must be dealt with in multilateral fora and in the spirit of complete equality of obligations and responsibilities of all nations.

Commentary Reviews Defense Research, Development

BK2311142790 *Delhi General Overseas Service in English 1010 GMT 23 Nov 90*

[Commander U. Udaybaskar commentary on Defense Research and Development Organization]

[Text] India's Defense Research and Development Organization, DRDO, has been in the news over the past fortnight in a modest but significant manner. In late October, Indian Navy's first very low frequency [VLF] station, INS Kattabomman in Tamil Nadu was made operational and this project was executed with close interaction between the DRDO and the Navy. This facility permits communication from the shore with submarines when they are submerged and will enhance the strategic capability of the Navy in an appreciable manner. While this may not be an appropriate moment to delve deep into acoustics and frequencies, the scientists say that this VLF station is one of the many small but significant feathers in the DRDO cap, an overview of which is available in a defense and science exhibition that opened in the capital. The organization, which celebrated its silver jubilee last year, has the mandate of carrying out research and development work to achieve results particularly in areas of critical technology that are not normally made available by developed nations. The requirements of the user agencies—the Army, Navy and Air Force—have to be interphased with the prevailing global technological threshold. The DRDO then has the important task of identifying a given technology and developing the weapon or the equipment, as the case may be. It is also to carry out trials to the satisfaction of the user and to bring the item to a level of [critical] production before handing it over to the production agencies.

DRDO has a number of successful projects to its credit. The most significant is the integrated guided missile development program, of which Prithvi and Agni are two examples. Thanks to DRDO, India today has the modest but respectable missile technology capability and know-how and the 250-km-range surface-to-surface missile Prithvi is already entering operational service. Purely for the missile capability alone, DRDO's contribution acquires a special scene in the overall national security framework.

Currently, the world is divided into two categories, the developed and the underdeveloped, variously described as the First World and the Third World, north-south, haves and have nots, and so on. In this hierarchy of nations, the [words indistinct] as it were is subtle and sometimes obvious form of coercion and control is at play. In this [scheme], the dominant and powerful players in each field, be it military, economic, or technological, lay down the rules and thereby establish their supremacy. India has steadfastly questioned such discrimination and has sought a more equitable order. Today, there is the Missile Technology Control Regime, MTCR, which restricts the flow of missile technology from the developed nations, who have built up huge arsenals, to the less developed countries that want to acquire this know-how.

The missile itself is a new technology weapon that can dramatically tilt the balance in any region and India has been unfavorably placed due to the proliferation and supply of missiles in the region and the neighborhood. The imposition of the MTCR by the West has made this technology very restricted. But for the efforts of DRDO, India would have not been in a position to master and demonstrate its military technology capabilities to the world. Thanks to the DRDO, we have a full-fledged missile program on the cards and indigenous tactical battlefield missiles like the Prithvi, Akash, and Nag, which are likely to join service in the near future.

It is this degree of self-reliance, however modest in scope, acquired in a hostile international environment that is to be noted while talking of cost-benefit ratios. The design for India's LCA [Light Combat Aircraft] incorporates a 32-bit mission control computer, which will be contemporary with the technology in the mid-1990's. Currently, the most advanced avionics of modern aircraft have only a 16-bit computer know-how, and likely India's main battle tank is undergoing technical trials, and on completion it will attain the [critical] production stage.

Reactor Using Man-Made Uranium-233 Commissioned

*BK1311163190 Delhi Domestic Service in English
1530 GMT 13 Nov 90*

[Text] India's experimental atomic reactor Purnima-3 has attained criticality at Bombay using man-made fuel

Uranium-233. This is the first time in the world that a reactor of this type became functional using the fissile isotope of uranium, namely uranium 233. Other reactors used the naturally occurring uranium-235.

Our correspondent, quoting Bhabha Atomic Research Center sources at Bombay, says this zero energy reactor will assist the 30-kilowatt Kamini research reactor at Kalpakkam, which is expected to become operational in five months.

IRAN

President Calls For Eliminating Nuclear Weapons

*LD0611123290 Tehran Domestic Service in Persian
1030 GMT 6 Nov 90*

[Text] President Hashemi-Rafsanjani received Mr. Hans Blix, the secretary general of the International Atomic Energy Agency [IAEA], before noon today. In the meeting, which was also attended by Mr. Amrollahi, the head of Iran's Atomic Energy Organization, Mr. Hans Blix referred to the fact that 141 countries have signed the agreement banning the use of nuclear weapons, praised the Islamic Republic of Iran's sincere cooperation with the IAEA and added: Iran is expected to do more toward the establishment of peaceful conditions in the world.

President Hashemi-Rafsanjani then praised the efforts made by the IAEA for controlling nuclear weapons and said: Today, people need to use atomic energy. However, the negative effects of that energy in accidents and the use of nuclear weapons must be prevented; for even if only one country in the world is armed with nuclear weapons, controlling it will be impossible.

Stressing that the mere signing of the agreement banning the use of nuclear weapons is not enough, the president added: In view of the existence of intercontinental missiles and the experience of Iraq's use of chemical weapons in the war against Iran, it has been proven that whenever the vital interests of countries are threatened, they will not obey international regulations. The Islamic Republic of Iran, which is a system based on ideological and ethical principles, will, of course, abide by its commitments; but that is not true of all countries.

In conclusion, Mr. Hashemi-Rafsanjani referred to the Persian Gulf crisis and said: If the United States is caught up in a war in the Persian Gulf, the nature and conclusion of the war will not be clear. The Islamic Republic of Iran, therefore, while stressing [the importance of] neutral international supervision of nuclear weapons, calls for the removal of that weapon from all countries.

Paper Urges Germany To Honor Reactor Contract

NC0211164490 Tehran KAYHAN INTERNATIONAL
in English 18 Oct 90 p 2

[Editorial: "Completion of Bushehr Nuclear Plant"]

[Text] Iran is a signatory to the nonproliferation treaty and will never violate international agreements on the peaceful application of nuclear energy. For the same reason Tehran did not forget its commitments towards the 1925 Geneva Accord banning chemical arms. The whole world knows that although the Islamic Republic of Iran suffered heavily due to toxic weapons used by Iraqi forces against Iranian civilians and troops, yet Iranian forces never deployed poison gases in the course of the eight year Iran-Iraq war. Therefore, the German government should understand that Tehran has no desire of making any kind of "weapons of mass destruction" since during the crucial stages of war with Iraq, Iran never used chemical weapons.

The failure of the German government to fulfil its commitments toward Iran with respect to the Bushehr nuclear reactor, will have negative impacts on the two countries long-run trade ties. During the past 60 to 70 years, Germany has been one of Iran's major trade partners. The two countries have also enjoyed bilateral cultural ties too. Thus it is not a correct policy for Bonn to endanger its historical relations with such a politically and economically strategic country as Iran over the provisions of a simple contract.

The head of Iran's Atomic Energy Organization (IAEO), Reza Amrollahi, recently criticized the German government's attitude toward the now half-built Bushehr nuclear power plant in Southern Iran.

Based on the provision of the contract signed between Tehran and Bonn, the plant had to be completed and put into operation with a total generating capacity of 1,200 megawatts of electricity in 1981. So far Iran has paid the German contractor, DM6 billion (\$4 billion) on the contract.

The shah's regime wanted to generate some 35,900 megawatts of electricity from nuclear reactors throughout the country by the year 2000. In view of the fact that Iran is located on what is geologically called "seismic belt", construction of a number of nuclear power plants across Iran could have been dangerous. But on the other hand, since some day, in not too distant future, most fossil fuel reserves such as oil, natural gas and coal will deplete and a more safe atomic energy would replace them it is of importance that Iran does something in this regard.

Although at the present time the price of nuclear generated electricity in Iran is twice as expensive as that produced by fossil fuels in Iran, still IAEO must strive to complete the Bushehr nuclear reactor, mainly for the sake of scientific and research activities. Iranian nuclear scientists must further develop their skill about atomic energy. In this respect the government of the Federal

Republic of Germany must respect and fulfil its commitments on the completion of the plant.

ISRAEL

IDF To Deploy New Pilotless Plane in 1991

TA0511112090 Tel Aviv DAVAR in Hebrew
5 Nov 90 p 2

[Article by Arye Arad]

[Excerpt] The IDF [Israel Defense Forces] has decided to procure the new Searcher-type pilotless planes manufactured by Israel Aircraft Industries [IAI]. These aircraft are expected to be deployed in the IDF next year.

The new model is intended for surveillance and intelligence gathering. It excels in its ability to hover over the target for more than 24 hours and in its low-altitude capability, which was made possible by an improvement in the wings' aerodynamic profile. The production costs decreased due to the application of model airplane manufacturing methods, instead of modes borrowed from the Kfir production line. An additional development is the ability to place an operational ground station to collect the data in the field, leaving the handling of instructions on takeoff, landing, and logistics for the rearguard positions—as per the currently practiced method.

As is well known, the IDF has revised its combat doctrine, basing it on unmanned aircraft, beginning with the first generation of the mini remote-piloted vehicle [RPV]. Now the RPV plant in the IAI's aircraft division is working on the development of civilian uses for the RPV, such as detecting radioactive fallout while penetrating the radioactive cloud itself. This project is conducted jointly with the Soreq Nuclear Power Station and the Geological Survey. [passage omitted]

Arens Rules Out Iraqi Nuclear Capability

TA0511185190 Jerusalem Domestic Service in Hebrew
1705 GMT 5 Nov 90

[Article by Karmela Menashe]

[Excerpt] [passage omitted] Minister Arens said the Iraqis continue to try to attain a nuclear capability.

[Begin Arens recording] To the best of our knowledge, they have not yet reached a nuclear capability. I suppose that is good news not only for Israel, but also for the forces deployed in Saudi Arabia. If from now on the world prevents the transfer of know-how and parts to the Iraqis which would permit them from achieving a nuclear military capability, I believe it will take them a long time to attain that capability. If, on the other hand, there is a continued transfer of technologies, whether via companies or individuals, then we will have to assume that they will achieve their target.

Now, about [the presence of] uranium mines in Iraq, I cannot confirm it, but it is possible. Still, there is a wide gap between uranium mines, which exist in many places around the world, and enriched uranium and the technology required to make a nuclear bomb which is based on enriched uranium. [end recording]

IRAQ

UN Urged To Ban Attacks on Nuclear Plants

JN0911163490 Baghdad INA in Arabic
1540 GMT 9 Nov 90

[Text] New York-United Nations, 9 Nov (INA)—Iraq, Jordan, and Yemen have jointly presented a draft law calling on the UN General Assembly to support the efforts of the disarmament conference [not further identified] to reach an agreement banning military attacks on peaceful nuclear installations.

'Adnan Malik, representative of Iraq, informed the UN General Assembly First Committee that anxiety is increasing because of the fact that an attack on nuclear installations will result in the emission of radiation whose effect could be equal to that of a nuclear attack.

While presenting the draft law on behalf of the three Arab states, Malik added that the group of experts set up by the UN secretary general after the Israeli attack on the peaceful Iraqi installations concluded that any deliberate attack on a nuclear reactor would discharge a huge amount of radiation into the air.

PAKISTAN

UN Delegate Reaffirms Peaceful Nuclear Use

BK2610130790 Islamabad Domestic Service in English
1100 GMT 26 Oct 90

[Text] At the United Nations, Pakistan has urged the International Atomic Energy Agency [IAEA] to assign top priority to development of nuclear energy for peaceful purposes and help developing countries overcome the energy shortage. Speaking in a debate on the report of the Vienna-based IAEA, the Pakistan delegate, Raja Zafarul Haq, called on the member-states to abide by the United Nations General Assembly's resolution that entitled all states to acquire nuclear technology for peaceful uses.

Raja Zafarul Haq said Pakistan has endeavored to promote an international agreement prohibiting attacks against all nuclear facilities and had concluded an agreement with India in this regard. He reaffirmed Pakistan's commitments to nuclear nonproliferation and to the peaceful uses of nuclear energy.

UN Endorses Pakistan Proposal on Nuclear Arms

BK1611133990 Islamabad Domestic Service in English
1300 GMT 16 Nov 90

[Text] The UN General Assembly's Main Committee has endorsed a Pakistan proposal calling for an early agreement to assure nonnuclear weapons states against the use or threat of use of nuclear weapons. It will now come up for vote in the General Assembly later this month, recommending that Geneva-based conference on disarmament actively continue negotiations to reach such an agreement. The draft resolution containing the proposal was prepared after intense negotiations between Pakistan and Bulgaria and was cosponsored by eight other nations.

New Prime Minister States Nuclear Policy

BK0811075590 Islamabad THE MUSLIM
in English 8 Nov 90 pp 1, 6

[By Tariq Butt]

[Excerpts] Islamabad, Nov. 7—Mian Nawaz Sharif, the newly elected Prime Minister, in his first address to the nation, announced the lifting of state of emergency promulgated on Aug. 6 at the time of dissolution of the National Assembly. Sounding conciliatory, he spelt out his future policies on many fronts, home and foreign, in a comprehensive 40-minute speech.

The Prime Minister vowed to carry forward the nuclear programme for peaceful objectives because he said otherwise the requirement of energy could not be fulfilled to "realise my dream of development." He made it clear that his government had no intention to develop the programme for military purposes. This was meant for the American consumption as the United States has suspended aid to Pakistan while objecting suspecting its nuclear programme. [as published] [passage omitted]

In a thinly-veiled reference to the cutoff of US aid, the Prime Minister said, "we have to do any emergency planning and to decide whether we want to be self-sufficient or move around with a begging bowl." "As a self-respecting sovereign nation, we have to meet our demands from our own resources," he said. [passage omitted]

Atomic Energy Chief on Peaceful Nuclear Program

BK2511143090 Islamabad Domestic Service in Urdu
1400 GMT 25 Nov 90

[Text] Atomic Energy Commission Chairman Munir Ahmed Khan has said that Pakistan wants to complete the stages of plant design, engineering, and construction works for nuclear power plants, utilizing indigenous capability and resources, to achieve self-reliance in the field of energy. Inaugurating a regional course on (?pressure) technology in Lahore today, he reiterated that

Pakistan's nuclear program, which is solely for peaceful purposes, is directed toward bringing about economic prosperity in the country.

Article Examines Peaceful World Nuclear Plan

*BK2610102890 Islamabad THE PAKISTAN TIMES
in English 26 Oct 90 pp 4, 9*

[Article by Munir Ahmad Suleri]

[Text] Speaking as leader of Pakistan delegation to the 34th Annual General Conference of the International Atomic Energy Agency [IAEA], Mr. Munir Ahmad Khan, Chairman, Pakistan Atomic Energy Commission [PAEC], said that the world had witnessed historic and revolutionary changes affecting relationship between super powers. Confrontation is being replaced by cooperation, opening up new opportunities for development. He welcomed these changes and particularly the steps taken towards winding down of arms race and moving towards nuclear disarmament.

In actual fact, the end of the cold war between the two super powers will augur well for closer North-South relationship on which the future welfare and prosperity of mankind depends. It is high time for IAEA to consider establishment of a nuclear fuel bank as envisaged in its statute. As regards nuclear safety, the leader of Pakistan delegation has strongly supported the Agency's programme. There are no two opinions that large-scale introduction and exploitation of nuclear power will not be possible without assurances of safety and public acceptance of nuclear energy.

Further, the present Gulf crisis has created many problems including a new energy crisis which could perhaps be worse than the 1973 and 1978 crisis. As such the debt-ridden developing countries cannot afford additional financial burden by importing expensive oil for power generation. Moreover, the use of fossil fuel for production of electricity is causing unacceptable environmental damage necessitating measures to restrict its use.

Though Pakistan is not a party to the inequitable Non-Proliferation Treaty, nevertheless, Pakistan's nuclear policy, as enunciated on various occasions strongly supports the establishment of nondiscriminatory regime of nonproliferation covering both vertical and horizontal proliferation of nuclear weapons. Pakistan's nuclear programme is peaceful and dedicated solely to economic and technical development and aims at bringing the benefits of peaceful applications of nuclear energy to its more than 100 million people.

PAEC is making valuable contribution in various sectors, especially energy, industry, agriculture and health. In a view of the defence needs of the country and the paucity of resources, PAEC has also started some vital work in defence field and one foresees that a number of items which Pakistan is importing at present against exorbitant rates, will be made in the near future.

Though Pakistan is prepared to any nonproliferation regime in our region which is nondiscriminatory. [sentence as published] Pakistan, being a peace-loving country strongly supports the idea of solving the problem of proliferation of nuclear weapons through constructive political dialogue, which addresses the security and development concerns involved. While there is a need for restraint in the application of nuclear power for military explosive purposes, there has already been too much restraint shown by the advanced nuclear states in making the peaceful benefits for nuclear energy available to the developing countries of the world.

Economically, the most attractive of the peaceful uses of nuclear energy is the generation of electricity for the energy starved states like Pakistan. However, this application has been confined almost entirely to advanced countries. There are only 25 nuclear power plants in developing countries with a total generating capacity of about 15,000 megawatts; which is less than 5 percent of the aggregate nuclear installed capacity of the world. If the present trend continues, the entire Third World will have no more than 40,000 MW nuclear energy by the end of this century, which is less than that in a single European country at present.

The proven fossil fuel reserves of most of the developing countries as well as their ability to pay for energy imports is very limited. If they were to consume fossil fuel at the same level as industrialised countries do, carbon dioxide emissions will increase four-fold, leading to extensive pollution and worsening of the greenhouse effect. This imposes a serious constraint on the development of these countries, yet the economically attractive and environmentally better alternative of nuclear power is denied to them.

There are those who perceive in this order of things a new type of technological colonialism involving the transfer of valuable mineral and energy resources from the less developed countries to industrialised countries, without adequate compensation of or the sharing of science and technology necessary for their development. Disparity and awareness of this inequitable threat increase in the less developed countries (LDC's) [sentence as published]. This feeling leads to misgivings and doubts about the real nature and intent of the nonproliferation regime and, ultimately, to the repudiation of the current regime. Even though there is no real linkage between the proliferation of nuclear weapons and the development of nuclear power under safeguards, the industrialised countries have chosen to use denial of nuclear power as an instrument for enforcing the nonproliferation regime. The various manifestations of the policy are well known—unilateral abrogation of international agreements, violation of Article IV of the NPT, the Nuclear nonproliferation Act of the United States, and the "London Clubs" nuclear supply guidelines. In this whole exercise the technical and political realities of the 1970's and 1980's, as well as the lessons of history, are ignored. The policy of denial has not been very

effective in controlling the spread of any modern technology. Embargoes may serve some economic and political purpose in the short term and introduce delays, but, in the long run, they inevitably prove to be counterproductive by providing the political motivation for countries in sensitive areas to seek nuclear autarky. This lesson, however, does not seem to have been appreciated even by those countries of the North, which have themselves been victims of such denials at one time or another. The reluctance of industrialised countries to share advanced technologies has unwillingly led to the emergence of new nuclear supplier states.

For example, India's nuclear establishment is the sixth or the seventh largest in the world. Soon after Independence in 1947, she was put on the nuclear path by her first Prime Minister. That course has been consistently pursued by all her successive governments. India has declared that she has acquired nuclear know-how in all fields but has not yet taken a political decision to build a nuclear weapon. When put to test against available evidence this claim does not ring the bell of truth. India's contention that her nuclear programme is not weapon-oriented, is belied by the facts. For India, the option of nuclear ambiguity has, in fact, run its course. Her IRBM [Intermediate Range Ballistic Missile] capability becomes meaningful only if India has a nuclear weapon to deliver.

India, is thus clearly a nuclear weapon state. The neighbours of India would be making an unforgivable error if they do not base their defence planning on this hypothesis. Recently there has been another development in India which Pakistan cannot afford to ignore (more particularly when the threat of a war, possibly a nuclear war, as apprehended by the super powers and the West imposed by India has not dissipated at all). Prime Minister V.P. Singh's decision to appoint Dr. Raja Ramanna as the Minister of State for Defence and Dr. P.K. Iyengar as the Chairman of the Atomic Energy Commission [AEC] can only be viewed as a subtle signal that India has decided to become a full-fledged nuclear weapons power. It may be recalled that the team of Dr. Ramanna as the then Chairman of AEC, and Dr. Iyengar as the leading scientist, had planned and executed the Pokharan nuclear test in 1974. These appointments can only mean that India has decided to give top priority to its nuclear weapons and missile development programmes.

Pakistan's modest nuclear research programme has been established by her indigenous effort. Her own scientists, technologists and designers have displayed considerable skill and ingenuity in achieving breakthrough in many fields through a process of trial and error. Their success is all the more laudable because they were forced to work in a hostile international environment in which the nuclear monopolists had closed technological shutters to them. The US and India, though for different reasons, brought to bear considerable pressure on Pakistan against her nuclear research programme. The scientists and engineers of PAEC, in collaboration with China

have succeeded in making a small research and training reactor of 27 kilowatt capacity which has just been set up at PINSTECH [Pakistan Institute of Nuclear Science and Technology].

At Nilore, near Rawalpindi, PAEC personnel are actively engaged in exploration of uranium to its conversion into fuel and will be able to meet entire fuel requirements of its reactors to be set up in future. A consortium of major industries is being set up to mark reactors within the country under the guidance of PAEC. The PAEC will produce first reactor one from France (100 MW) and it would be a bit more expensive. The second from China (300 MW) will be installed and put into operation by 1997, and by 2006 PEAC will be able to set up power plants, which would generate 600 MW electricity. Pakistan has already achieved essential capability in the front end involving mining, milling, refining and manufacturing nuclear fuel and materials. It can hardly be over emphasised that proliferation of nuclear weapons is essentially a political problem, which should be tackled primarily on the political plane than through the self-defeating policy of attempting to use technical fixes. Because the motivation to go nuclear is essentially political, the desired restraint should also come through the political route. Major regional conflicts and problems may drive certain states to seek weapons of mass destruction including chemical, biological and nuclear armaments. This applies to the Middle East, South Africa and Latin America. The nature of the problems are well known: The need is to find out regionally acceptable solutions in which the international community could and should live in peaceful conditions.

At present, Pakistan is faced with a serious challenge to her national security. The magnitude of threat demands review of her on-going nuclear policy. The American Nuclear Society's Special Committee on Nuclear Weapons and Peaceful Uses of Nuclear Energy observed that:

"Interest in nuclear weapons is more likely to arise from complex considerations of national security, rather than from technical opportunity. Once a decision to acquire nuclear weapons is made, the acquisition of sufficient material is only a matter of time, available skill and resources. Nuclear weapon proliferation is thus primarily an international political issue and the eventual solution is in the political domain rather than in the technical."

Nuclear Program Not Affected by Aid Cuts

*BK0611103890 Islamabad THE MUSLIM
in English 6 Nov 90 p 6*

[Text] Lahore, Nov 5—Dr. A.Q. Khan, head of the Dr. A.Q. Khan Research Laboratories Kahuta has said that his laboratories were doing the research work of international repute and were contributing 25-30 research papers annually to the journals of international repute. Our job has been widely appreciated at the international forums as well, he said.

Dr. A.Q. Khan was addressing a seminar on "library education in Pakistan, problems and prospects" in Lahore Monday. He said though all the research work was the result of our innovations and struggle, we did not receive any technical know-how from abroad but we can't reject the use of books, magazines and research papers in this connection.

Dr. Khan said that books and libraries endorse confidence and help us in learning. He said that research without library, and library without funds was impossible. He urged the scientists, engineers and technicians

to get in touch with the rapid developments taking place in the world of science and technology through the usage of books and libraries. He added that for the economic development in the country importance of standard research work could not be ruled out.

While talking to the newsmen Dr. Khan dispelled the impression that Pakistan's peaceful nuclear programme could be disturbed due to the lack of funds and suspension of the US financial assistance and said "we must continue it at any cost."

Paper Urges U.S. Action on Nonproliferation*PM0211115190 Moscow IZVESTIYA (union edition)
in Russian 31 Oct 90 p 5*

[Article by Vikentiy Matveyev: "Political Observer's Opinion; Is the Nuclear Club Expanding?"]

[Text] Some Western observers believe that the main reason for the buildup of U.S. forces against Iraq is Washington's concern over the possibility of Baghdad getting nuclear weapons. These observers reckon that preventing this by any means is equally as important a task as restoring Kuwaiti sovereignty.

But it is not only a matter of Iraq. Voicing the position of influential Washington circles, some time ago Senator John Glenn pointed to the "increase in the threat of nuclear war, not because of what the Soviet Union is doing but because small or less industrially developed countries may get hold of nuclear weapons."

A U.S. journal published information based on CIA data 11 July 1988 regarding the number of nuclear charges possessed by four countries. It was claimed then that Israel has at least 100 units, the RSA [Republic of South Africa]—approximately 20, India—the same, and Pakistan—four. The journal wrote the following: "Technically a nuclear war between Third World countries has become an alarming possibility...."

The U.S. Congress reacted resolutely this fall to a report of an attempt by Pakistan to obtain from a U.S. company the high-temperature furnaces needed to produce atomic bombs. Islamabad was told that U.S. economic and military aid would cease. People on Capitol Hill took this step despite the fact that Pakistan has sent several thousand of its troops to reinforce U.S. forces in Saudi Arabia.

Washington's political and military circles do not hide their concern that the two largest countries in Latin America—Argentina and Brazil—may become nuclear powers.

The gravity of the problem is obvious on a global scale. It is all the more irritating that a real chance of making common efforts to resolve it was lost at the fourth Geneva conference 20 August through 15 September examining the 1968 Treaty on the Non-Proliferation of Nuclear Weapons. Article 6 of the treaty requires that all signatories take effective steps to put a stop to the nuclear arms race and implement disarmament in this sphere. A pledge which, understandably, applies primarily to those countries that possess nuclear weapons.

What happened at the Geneva conference? Delegations from virtually all countries advocated bolstering the nuclear nonproliferation regime and to this end called for the complete cessation of testing as a step which should create the requisite material conditions to ensure that mass destruction weapons do not spread around our planet.

Is that logical? Quite. However, it did not prove possible to secure the sought-after accord in Geneva. The conference did not even adopt a final document although it did nonetheless manage to make some progress on certain issues. Such important suppliers of nuclear fuel for nuclear power stations as Germany and Japan agreed that all enterprises everywhere that procure these materials should in the future be embraced by strict IAEA—International Atomic Energy Agency—guarantees. New ideas to improve the IAEA inspection mechanism were put forward.

But the Geneva conference failed on the main issue. The U.S. and British delegations refused to come to an accommodation with the other delegations on the question of the complete cessation of nuclear testing.

The security of all states—without exception—will not be reinforced but undermined if mass destruction weapons spread around the globe like a malignant tumor. Britain's influential FINANCIAL TIMES stated with full justification in its 12 October editorial: "Nuclear proliferation represents a real threat to NATO countries' security."

And not only to them of course. As is well known, the USSR Supreme Soviet recently deemed it necessary to once again draw the attention of the world's legislatures and public to the urgent need for the most speedy cessation of all nuclear testing as one of the most implement elements for strengthening the nuclear non-proliferation regime and eliminating weapons. Our country is ready to turn the year-long break in Soviet nuclear testing into an indefinite, definitive break if the U.S. Government also stops its programs for tests of this kind unilaterally or on the basis of a mutual accord.

Our legislators are saying that they are prepared for the USSR to become a nuclear free state altogether. If talks can be held on the complete banning of chemical weapons, why is the same not possible for the equally dreadful nuclear weapons?

Soviet legislators are waiting for their colleagues in other countries to respond to this appeal. The USSR Supreme Soviet delegation gave this appeal to the U.S. Congress. On his return to Moscow delegation head G. Borovik noted the positive mood in the Congress at least with regard to substantially reducing the level of nuclear tests without delay. However, this is the very minimum that should be done.

U.S. Secretary of State J. Baker had every reason to say that the problem of nuclear proliferation is the main threat to security in the nineties. Our country and the United States can do a great deal to remove this threat through cooperation.

It is necessary to act, and the complete cessation of nuclear tests could be an important step in protecting mankind from the uncontrolled anarchy of nuclear arms. The nuclear test on Novaya Zemlya has once again

shown the world public that it is impossible to unilaterally stop explosions of this kind. Joint steps are required, but the main thing is for all parties to want this.

A desire based on correct, realistic understanding of what the prevailing world situation requires of states which possess nuclear weapons but which do not see this as some kind of special privilege but rather as a duty to mankind—to protect the world from the disaster of a devastating conflict. This threat will increase if the nuclear club expands. Since people in Washington understand the danger of nuclear proliferation, they should draw practical conclusions to avert this process. Today. Tomorrow may be too late.

Commentator Warns Against Arms Transfers to South

*PM0611103190 Moscow PRAVDA (second edition)
in Russian 2 Nov 90 p 4*

[Article by PRAVDA political observer Vsevolod Ovchinnikov under the rubric "My Opinion": "Why Cast Boomerangs?"]

[Text] It never entered anyone's head that the end of the cold war could have undesirable side effects. But it is a historical paradox that the cessation of confrontation between East and West could give rise to a "threat from the South," if a wave of abandoned weapons hits the developing countries, fanning the coals of old regional conflicts and sparking off new ones. Yet each of them—as the Iraqi aggression against Kuwait illustrates—threatens to undermine international security, that is, they have a boomerang effect as far as we are concerned.

Even if military rivalry between the two superpowers becomes a thing of the past, it is doubtful whether the peoples of Asia, Africa, and Latin America will smartly shrug off the cold war legacy: the confrontation mentality and the tendency to regard combat potential as the best guarantee of state independence and international prestige. The worldwide proliferation of mass destruction weapons is not a new problem. The Treaty on the Non-Proliferation of Nuclear Weapons was the first barrier against this danger. It has been subscribed to by over 140 states, which have gained access to the peaceful use of the atom in exchange for a commitment not to produce nuclear warheads.

For all its flaws, a nonproliferation arrangement does exist in this sphere. Which, unfortunately, cannot be said of missiles. Participants in ongoing or potential conflicts, such as Israel and Egypt, Iraq and Iran, India and Pakistan, are capable of producing them. The consequences of the former tiff between Moscow and Beijing were a factor here, as well as the rivalry between Washington and Moscow. In creating its missiles Delhi used,

in particular, Soviet technology, while Islamabad used Chinese. Therefore it seems to me desirable that the USSR and the PRC should subscribe to the "big seven" accord: In 1987 the United States, Japan, the FRG, Britain, France, Italy, and Canada jointly decided to restrict exports of missiles and the technology for their production.

But the "threat from the South" which could replace the East-West confrontation is by no means confined to nuclear warheads and ballistic missiles. In mid-November the Helsinki process participants are to sign an agreement in Paris on the radical reduction of forces and conventional armaments in Europe. Thousands of tanks, armored personnel carriers, guns, and aircraft are to be withdrawn. What could be more gratifying, you might think. But serious analysts in the West are displaying concern about something that really should worry us, too, lest there be a "pseudoconversion;" that is, the transfer of this enormous mass of combat equipment to a Third World filled with contradictions.

Our long-standing opponents and recent partners have another cause for anxiety: First, the biggest reductions will fall to the lot of the Warsaw Pact countries and, second, it is the USSR and its allies that particularly need hard currency at the moment. Will the East be able to resist the temptation to put its affairs in order by selling tanks and guns? According to the forecasts, the annual volume of world weapons exports could again reach the record level of the early eighties: \$50-60 billion, compared with the current \$30-40 billion. I would hope that the relevant Soviet departments would be farsighted enough to avoid easy solutions which could be costly later.

Without questioning each state's right to individual and collective defense, it is time to devise precise rules governing the sale and supply of weapons and give them the formal shape of an international convention. The Soviet stance on this score is set out in a letter from the USSR foreign minister to the UN secretary general. In order to limit the flow of combat equipment from one region to another what is needed above all is glasnost. Moscow supports the idea that all countries submit annual data to the United Nations both on military budgets and on exports or imports of weapons. The register would aid the switch from superarmament to reasonable defense sufficiency, prevent the creation of offensive potentials, and stop the spread of the most lethal means of warfare.

Now that the cold war is over, it would be a good idea, I think, to create something along the lines of the notorious Coordinating Committee on Export Controls. Not to keep the West's scientific-technical achievements from the East, but to prevent the transfer of the arms race from the North to the South. Otherwise the great powers would not in fact be disarming but would be casting boomerangs at their own and others' expense.

EUROPEAN AFFAIRS

EC To Boost Thermonuclear Fusion R&D

91AN0026X Brussels *EUROPE* in English
28 Sep 90 p 8

[Article: "(EU) Research: The European Commission Proposes to the Council a Programme on Controlled Thermonuclear Fusion, a Change in JET [Joint European Torus] and the Continuation of the International ITER [International Thermonuclear Experimental Reactor] Project"]

[Text] Brussels, 27 September 1990—The European Commission has adopted three proposals to the Council in the area of thermonuclear fusion, on the initiative of Vice President Pandolfi, namely:

1. A specific R&D programme in the area of controlled thermonuclear fusion (1990-94). This proposal is the fifteenth and last one aimed at implementing the Third Research & Development Framework Programme 1990-94.
2. The change in the statutes of the Joint venture JET (Joint European Torus) so as to extend the project up to 1996.
3. A negotiation directive for continuing cooperation between the EC, Japan, the United States and the USSR concerning the project for an International Thermonuclear Experimental Reactor (ITER).

The long-term objective of the Community action underway for many years in the area of thermonuclear fusion is the realization in the middle of the next century of prototype reactors that are "safe and not harmful to the environment." The three new proposals are related. A strategy in stages is being contemplated to attain the objective of commercial operation. The first stage, corresponding to the research currently being conducted by JET, consists of providing evidence of the scientific feasibility of fusion. The second stage (called the "next step") provides for the construction of an experimental reactor. Finally, the third stage will comprise the realization of a demonstration reactor, "DEMO."

The priority of the new specific fusion programme is the establishment of the scientific and technical basis for the construction of an experimental fusion reactor (next step) and the preparation of industry. The extension of JET to 1996 should allow support to be provided for the research activities of the second stage. The experimental reactor should allow self-maintained and long duration fusion reactions to be produced.

EUROPE reminds readers that overall Community financing in this area totals ECU 458 million to the end of 1994.

AUSTRIA

UK Accuses Firms of Circumventing Iraq Embargo

AU2611111990 Vienna *KURIER* in German
24 Nov 90 p 2

[R. Haberson report: "Are Austrians Trying To Circumvent UN Boycott"]

[Text] Britain now suspects Austrian companies of trying to undermine the UN embargo against the Gulf aggressor Iraq. Recently Britain sounded the alarm in Austria: There are indications that three companies might be trying to make deliveries to Iraq via roundabout routes. They cited the Burgenland company LIM, the company T. in Styria, as well as company N. However, already weeks ago the State Police (at that time following up U.S. reports) were not able to find any incriminating facts concerning LIM. It had been assumed that chemicals were supposed to be exported, which are also used for the construction of missiles. At that time, LIM rejected the accusations.

According to British information, in the case of company T. special cables for an Iraqi armament company are involved. As regards N., it is said that they might be trying to circumvent the embargo by making deliveries via the USSR.

FINLAND

Nuclear Power Discussed With Soviet Minister

LD0111040490 Helsinki *Domestic Service* in Finnish
1600 GMT 31 Oct 90

[Text] [Announcer] In the discussions between the Soviet and Finnish environment ministers it has emerged that the Soviet Union and the United States are developing a new nuclear weapon. In the talks Environment Minister Kaj Baerlund asked the Soviet Union for an account of a gigantic nuclear waste depository being planned for Sosnovyy Bor near Leningrad. In that area there are already four nuclear power stations and an old nuclear waste depository. Jaana Kanninen continues:

[Kanninen] According to Leningrad scientists, among others, very worrying reports have spread to Finland about the substandard condition of both power stations and the nuclear waste depository. At the power stations there have been several serious faults in operation, about which no information has been given. Nataliya Godzova, a researcher at Leningrad University, who spoke in Lappeenranta last weekend, said a new gigantic nuclear waste depository is being planned in the same area. Its size would be five times that of the old one, and it would swallow up all nuclear waste developed in the north-western part of the Soviet Union.

Environment Minister Kaj Baerlund had a private discussion lasting over two hours this morning with Nikolay

Vorontsov, chairman of the USSR State Committee for the Protection of the Environment, who is about to end his visit to Finland, about the nuclear waste depository, among other things.

[Begin recording] [Baerlund] The Soviet minister was not able to confirm or deny this report, but we agreed that the Soviet side will acquire the appropriate information and send it to Finland as soon as possible. I stressed that although this new depository would be of a better standard than the old one, such a big increase in the storage of nuclear waste so near the Finnish border is a matter of great interest to the Finnish authorities, and I am convinced that discussions on this matter will continue.

[Kanninen] The Soviet Union has already agreed to the Finnish authorities being allowed to make safety checks at nuclear power stations. Now the nuclear waste depositories are also to be included.

[Baerlund] This will be proposed officially to the Soviet Union in the next few weeks when we will probably also be able to discuss the inclusion of nuclear waste storage matters in this inspection operation, if it is found necessary, and obviously it will be necessary as regards Leningrad.

[Kanninen] At this morning's negotiations Baerlund also took up the nuclear tests in Novaya Zemlya which are causing concern among the Finns. Minister Vorontsov promised the Soviet parliament will alter the decision-making system with regard to nuclear tests. Charges could no longer be exploded without the knowledge of the environmental authorities and the highest decision-makers, as happened last time. This was comforting news for the Finns but, on the other hand, the Novaya Zemlya tests come into an entirely new light if the information that Baerlund has received from his Soviet colleague is true, that both the United States and the Soviet Union are developing an entirely new nuclear weapon.

[Baerlund] Such information has been given quite unambiguously, and in my view, with regard to the international situation in which disarmament is being stressed, this is a very regrettable and worrying matter, if it is true. Now (?we would hope) that this matter will be investigated very unambiguously within the United Nations, for instance. [end recording]

GERMANY

Continued Business With Iraq Reported

AU2611161890 Hamburg DER SPIEGEL in German
26 Nov 90 pp 29-31

[Unattributed report: "Sizzling in the Afternoon"]

[Text] The foul smell "of chemicals" which he had to support while being held hostage have remained in the nose of Manfred Ritschel even after his release. The

merchant of Wattenscheid was particularly upset by the poisonous smell everyday he was led across the court along with the other hostages to pick up food just before 1900.

Ritschel's fellow detainee, Peter Boeshans, related similar experiences: "Production has not stopped, there were noises from the workshops, and there was this stench," he stated. Another person who was also kept as hostage recalls "loud whistling and sizzling," usually in the afternoon.

The hostages could only guess what the smells and noises were. Their prison was a workshop of the missile-proof poison gas factory of Samarra, some 120 km outside Baghdad. After his return home, one of the prisoners said that "nobody was supposed to see anything that was going on outside." The door of the manufacturing shop, where the hostages were kept, was welded.

At the armament complex of Taji, northwest of Baghdad, where in the past few years the Ferro Steel concern of Essen as general contractor set up a cannon factory camouflaged as a universal steel mill, regulations were less strict. The hostages, who were taken there as living protective shields, were able to watch workers in action—they were obviously German specialists.

The reports of the first persons who returned from Iraq have alarmed German and American intelligence services: "In almost all important arms factories of Saddam Husayn, who is being boycotted by the whole world for his occupation of Kuwait, production seems to continue with foreign support.

According to intelligence service analyses, poison gas and cannons, intended for use against the rest of the world, were produced in the immediate neighborhood of the prisons in which the hostages were kept; sometimes, the production was carried out even with the help of Germans, who are in the desert not as hostages but as business partners of the dictator.

From hostages' reports and other sources, intelligence services have reconstructed that—at least until early November—for example in Samarra one shift was working five days a week. The workers produce about 400 kilograms of Tabun and Lost per day, and maybe even Sarin.

Experts believe that crucial sections of these poison gas factories can be controlled only by highly qualified experts, of whom there were very few in Iraq—at least before the embargo.

German efficiency has been a topic of interest among the international hostages for quite a while. For example, when Mr. Ritschel of Wattenscheid was moved to a plant of the "Iraq Atomic Energy Company" along with other prisoners of Samarra in early October, an American hostage said to him: "We have come from Taji, at the building site there you could have talked to your fellow citizens."

In the far north, in Mosul, where, together with about 40 German subcontractors, the Projecta GmbH company of Bielefeld built the most modern military research center in the Middle East, another German hostage was also reminded of his home in various ways: He told Dieter Schinzel, a deputy of the Social Democratic Party of Germany (SPD) to the European Parliament, and who visited Iraq, that he saw many machines made in Germany as well as German experts, who were working busily.

Many signs have indicated that Western experts are forced to continue their work. However, there is also plenty of information that helpers from Germany and other places also work there voluntarily—for gold, because of scarce foreign currency.

According to observations by the Federal Intelligence Service (BND) based on information received by Western agents but also on the basis of statements by those who returned from Iraq, business partners in Baghdad and Europe continue to carry out their transactions. Discretely as always, West German enterprises continue to fulfill their agreements with belligerent Saddam.

Iraq expert Schinzel has stated that the experts enter the country via Amman. It is still easy to get to the Jordanian capital. From there, Iraqi Airways offers daily flights to the Saddam Husayn International Airport.

The ritual is carried out according to the old rules. The helpers are led past the checkpoints—without troublesome passport and customs formalities.

In the past this used to be a favor, now it is camouflage. An EC regulation of 29 October bans all services for the Iraqi economy with the exception of bank transactions. The size of criminal sanctions is currently discussed in the European capitals.

People do not mind taking long roundabout ways to break the embargo. It is conspicuous how many German salesmen do not directly fly back home from Amman but first stop over in London or Amsterdam.

FRG border guards routinely check the itinerary of people returning from the Middle East. This is how the authorities have found out that, for example, Manfred Schwender of Ibbenbueren in Westphalia returned from Iraq about one month ago—not on a flight along with released hostages but as an individual passenger.

Schwender and his father Ewald have been known in connection with business deals with Iraq. They trade in machines and building equipment on a wholesale basis ("mainly with Middle East countries") and attracted some attention a couple of years ago when they built an assembly line which has now been set up in Samarra.

The plant was alleged to have produced harmless containers such as fire extinguishers. Yet, in reality it is aircraft bombs which Saddam has filled with nerve gas.

The Schwenders have stated that they were cheated and that they did not know the purpose of their plant. Father and son are now facing court action. Now the investigators want to find out what Manfred Schwender was doing in Iraq at the time.

German merchants with strong nerves cannot be stopped even by an embargo or the danger of war. Representatives of the German arms and chemical industry have invested in Saddam's war preparations for many years. Their unscrupulous behavior has become public only in the past few months. Yet, the Western business people are not willing to write off their investments in the Middle East.

For the investigators it is difficult to interpret correctly all missions in Iraq. In the past few weeks, some enterprise managers have tried to achieve the release of company employees on their own account, while others obviously wanted to fulfill their commitments because otherwise the deposited guarantee sum would be cashed in by the Iraqis. Others fear having their names placed on a black list and thus possibly lose lucrative deals.

The Federal Office for Criminal Investigation and the BND [Federal Intelligence Service] have more and more information about companies that break the embargo and supply all kinds of goods. The illegal shipments go via the border with Iran, which is 1,450 km long, or via the Turkish border in the mountains in northern Iraq.

The many loopholes and secret paths are very difficult to control, so that the supply of goods continues smoothly. This might have included goods for some people who—here in Germany—were regarded as hostages.

For the people of the intelligence services all these reports have created the impression that there are certain differences between the situation of foreigners who are there as hostages and those who are in Iraq as business people.

The situation seems to be worst for those who were captured in Kuwait. They were the first ones to be taken to strategic places in large numbers and to be occasionally even badly treated.

However, those who entered the country after 2 August, the day of the invasion of Kuwait, did not have to fear being captured by Saddam's hangmen. Foreigners who were in Iraq itself before 2 August were usually treated in a better way—even though one can hardly describe their treatment as that of "guests," as Saddam does.

The situation is probably best for those who work in the armament sector. They are allowed to move freely and some have even enjoyed first-class treatment: Project manager Saba Modher, responsible for the missile program, issued loads of open certificates which would allow people to leave. For example, the Iraqi industry minister needed a certain number of places for his own purpose.

The helpers were very surprised about what happened in Baghdad before the return of the German hostages two weeks ago. Mr. Schinzel, who accompanied Brandt on his mission, stated that some people just did not want to leave the country. Others, who received exit visas a long time ago, arrived in London only weeks later. When asked about his employer one man gave the names of three different companies, "none of which was true" (Schinzel).

The fact that the group of Kuwait hostages aboard the aircraft was suddenly joined by about two dozen travelers who were never seen during the long days of waiting and got on board only at the very last moment is also a hint of private agreements with the Saddam regime. When a television crew of RTL Television began to shoot some footage on the flight back, some of the last-minute travelers were hiding their faces behind newspapers.

In belligerent Iraq it is currently difficult to tell victims from perpetrators. In the same way that the allied troops in the Gulf see themselves confronted with their own arms technology, with which their salesmen contributed to the Iraqi arms buildup over the years, some engineers were arrested, thus becoming victims as a result of the activities of their company.

The names of many companies that are known in connection with Iraq appear in both the list of those who have returned and also in that of those who have stayed there: The lists contain the Heberger Bau company, which is involved in the deals with the poison gas plant of Samarra, the Gildemeister company, the planners of the Mosul arms center, as well as the two Mosul trainers Hahn and Kolb, and the Fortuna Works of Stuttgart. Staff of the Messerschmitt-Boelkow-Blohm company are of course also on these lists.

Certainly, some of those who returned in Brandt's hostage aircraft hardly needed any humanitarian help: One of those Germans who flew back along with Brandt was an employee of the Baghdad arms company Al Fao Establishment, which is pursuing lofty goals with its missile program.

Another one used to work for the Technical Corps for Special Projects, a department of the Defense Ministry headed by hostage taker Saddam Husayn's son-in-law, Husayn Karminal [spelling as published].

Company Managers To Be Sued for Helping Iraq

AU2011085590 Hamburg DER SPIEGEL in German
19 Nov 90 p 16

[Unattributed report: "Complaint Against Supplier of Armament Products to Iraq"]

[Text] Managers of the Bielefeld company Gildemeister Projecta (Gipro) GmbH are now to be sued for their armament activities. An expert report by the Foreign

Ministry, which says that Gipro deliveries caused considerable damage to Germany's foreign relations in at least two cases, was the decisive element. The public prosecutor's office plans to file the complaint shortly. As of the mid-1980's Gipro, as general agent, built the largest military research center in the Middle East in the Iraqi town of Al-Mawsil—at first with many permits by the Eschborn Federal Economic Office. The so-called Saad-16 project mainly develops missiles and chemical weapons and is testing a model of the supergun. The 1.5-billion-mark complex is equipped with wind tunnels, electronic work shops, and underground shooting galleries and is considered to be one of Saddam Husayn's pet projects. Saad-16, which is protectively surrounded by a dense belt of missiles, is officially declared as a civilian project of Al-Mawsil University.

Cabinet Decides To Ease Technology Export Curbs

LD3110155790 Berlin ADN International Service
in German 1458 GMT 31 Oct 90

[Text] Bonn (ADN)—Machine tools, computers, telecommunications technology, and lasers can, in the future, be exported without great difficulties to the countries of the former Eastern bloc.

Government spokesman Hans Klein says the federal cabinet decided this in Bonn today. This means that the export of these goods is also possible to the states of Central, South, and Eastern Europe, which have opened to the market economy.

To prevent the spread of nuclear technology and of carrier and arms technology, certain export limitations would be maintained on a limited number of sensitive purchasing and end-user countries outside Europe, Klein said.

New Technology Transfer Controls Surveyed

AU1911113890 Duesseldorf HANDELSBLATT
in German 14 Nov 90 p 10

[Article by "sm": "The Network of Controls Has Become Tighter"]

[Text] Bonn, 14 November 1990—The Federal Government and the Bundestag have tightened the foreign trade law and the foreign trade controls through numerous measures since the beginning of 1989. This became necessary because of the affair in connection with the Libyan gas plant in al-Rabitah. Since the middle of this year, calls for tighter foreign trade controls have increased because of the feared use of Iraqi chemical weapons, which were produced with German help, against Western allies.

HANDELSBLATT presents a survey, based on documents of the Economics Ministry, of decisions designed to prevent the export of sensitive goods and technologies that have been implemented so far.

I. Legislative Measures

A. Decrees issued by the Federal Government

—The tightening of controls for export to Libya, adopted on 15 March 1989, was implemented with the third decree on the amendment to the foreign trade decree, of 22 March 1989. (Federal Law Gazette I, page 535, entered into force on 1 April 1989). With this decree, a ban on legal transactions and actions by residents which are linked with the establishment and operation of plants for the production of chemical weapons in Libya, was introduced in foreign trade.

With the fourth decree on the amendment to the foreign trade decree of 21 June 1989 (Federal Law Gazette I, page 1134, entered into force on 29 June 1989), this ban was extended to the export of goods and the handling of business for a project involving the tanking up in the air of aircraft in Libya.

With the 64th decree on the amendment to the export list of 16 August 1989 (Federal Gazette No. 154 of 18 August 1989, page 3925, entered into force on 19 August 1989), an export permit for hang-gliders (kites, gliding umbrellas) to Lebanon, Libya, and Syria was introduced. With the sixth decree on the amendment to the foreign trade decree of 20 March 1990 (Federal Law Gazette I, page 554, entered into force on 28 March 1990), an additional transit permit for hang-gliders to Lebanon, Libya, and Syria was adopted.

—With the resolutions dated 15 March, 4 October 1989, and 20 February 1990, the list of chemicals subject to permission was extended to a total of 50 substances (62d decree on the amendment to the export list—Federal Gazette No. 68 of 11 April 1989, page 1889, entered into force on 12 April 1989; 66th decree on amendment to export list—Federal Gazette No. 198 of 19 October 1989, page 4945, entered into force on 20 October 1989; 67th decree on the amendment to the export list—Federal Gazette No. 54 of 17 March 1990, page 1333, entered into force on 27 March 1990).

In the United States, for example, 50 substances are subject to export control, with some restrictions applying to certain countries only, and in Japan 50 substances have been subject to export permission since July 1989.

—The tightening of the control of technology transfers in the military-strategic field adopted on 15 February 1989 was implemented with the second decree on the amendment to the foreign trade decree (Federal Law Gazette I, page 341, entered into force on 8 March 1989). With this decree, the control of technology transfers, of merchanting transactions, and the passing on of knowledge that is not publicly accessible concerning the manufacture of sensitive goods was extended to all countries of the world, with the exception of the OECD countries. Until that point, export permits were only needed for East Bloc countries.

OECD countries have been exempted from this regulation because there is close cooperation with these countries within the framework of international export control. With this decree, the duty to obtain a permit for the export of chemical plants has been extended to engineering data.

—On 15 February 1989, the Cabinet decided to specify the duty to obtain a permit for the export of certain chemical plants, which has been in force since 1984, introducing the duty to obtain a permit for the export of plants that are suited for the production of biological warfare agents.

The resolutions adopted by the Cabinet were implemented with the inclusion of new lists D and E in the export list on the basis of the 63d decree on the amendment to the foreign trade decree (Federal Gazette No. 139a of 28 July 1989, entered into force on 7 August 1989).

Controls concerning the final destination of goods mentioned in lists D and E were introduced—analogously to the control of goods mentioned in lists A, B, and C—with the fifth decree on the amendment to the foreign trade decree (Federal Law Gazette I, page 1749, entered into force on 30 September 1989).

—With the seventh decree on the amendment to the foreign trade decree of 21 June 1990 (Federal Law Gazette I, page 1170, entered into force on 28 June 1990), the transit of goods through the FRG for the Iraqi project of an extended-range gun was banned. This was accompanied by the 68th decree on the amendment to the export list of 21 June 1990 (Federal Gazette No. 116 of 27 June 1990, page 3269, entered into force on 28 June 1990), under which the duty to obtain a permit for the export of certain equipment for exports to Iraq was introduced.

This was designed to prevent the supply of subcontractor products from the economic area for the Iraqi project of an extended-range gun. Both decrees have meanwhile become redundant as far as Iraq is concerned because of the UN trade embargo.

—With the eighth decree on the amendment to the foreign trade decree of 18 July 1990 (Federal Law Gazette, part I, page 1510, entered into force on 11 August 1990), participation by FRG citizens in missile projects in other countries became subject to permission. The legal basis for this is Section 7, Paragraph 3, which was incorporated into the foreign trade law with the fifth law on the amendment to the foreign trade law, which was adopted at the beginning of August 1990. Thus, by issuing a decree, it has become possible to make the participation of Germans in foreign projects in the sphere of armament subject to permission.

—With the ninth decree on the amendment to the foreign trade decree of 7 August 1990 (Federal Gazette No. 146 of 8 August 1990, page 4013) restrictions

concerning the disposal of Iraqi and Kuwaiti assets, particularly in the sphere of capital transactions, were introduced. Thus, the disposal of all accounts, deposits, and other Iraqi and Kuwaiti assets are subject to permission.

This is primarily designed to prevent Iraq from seizing Kuwaiti assets through authorities controlled by Iraq. With the 69th decree on the amendment to the export list of 7 August 1990 (Federal Gazette No. 146 of 8 August 1990, page 4013), the export of certain goods from Germany to Iraq whose use for military purposes cannot be ruled out was subjected to permission. This regulation has become redundant because of the trade embargo.

—With the 10th decree on the amendment to the foreign trade decree (Federal Gazette No. 149 of 11 September 1990, page 4068), the Federal Government is implementing the resolutions of the UN Security Council. With resolution 661/90 of 6 August 1990, the UN Security Council adopted comprehensive economic sanctions against Iraq because of Iraq's invasion of Kuwait. The sanctions are based on Chapter VII of the UN Charter and are binding for the entire community of states.

In the sphere of imports and exports under EC regulations, the 10th decree is only of declaratory significance as far as export bans are concerned, because EC law prevails. As a result of the 10th decree, sanctions were added to EC law.

In the field of payment transactions, all payments to Iraq or Kuwait are banned if they are linked with commercial transactions that fall under the embargo. All other payments are subject to permission.

All activities by Germans in Iraq and Kuwait in connection with weapons and military equipment, as well as their development, production, and use are also banned. In addition, the passing on of know-how and the transit of goods destined for Iraq and Kuwait are also banned.

—Controls concerning the final destination of imported goods that fall under the embargo were tightened with the fifth decree on the amendment to the foreign trade decree of 10 September 1989 (Federal Law Gazette I, page 1749, entered into force on 30 September 1989).

The tightening of this rule became necessary because of incidents that were examined by the investigation committee of the Bundestag set up to clarify certain events in the nuclear sphere.

—The control of foreign trade in the military-strategic area has also been tightened by extending the duty to obtain permission for the transfer of technology to the passing on of data processing programs that are not accessible publicly (software) (fifth decree on the amendment to the foreign trade decree of 20 September 1989—Federal Law Gazette I, page 1749, entered into force on 30 September 1989). Irrespective of the government's

decisions adopted on 15 February and 15 March 1989, the tightening of the controls became necessary because of the increasing significance of software for technical processes of all kinds.

—When introducing stricter controls, applications forms for export permissions that can be read by computers were introduced with the seventh decree on the amendment to the foreign trade decree of 21 June 1990 (Federal Law Gazette I, page 1170, entered into force on 1 October 1990). In this way, the handling of the applications at the Federal Economics Institute has been essentially rationalized through the use of a data processing system. Moreover, a number of additional questions have to be answered on the new forms, which, in view of the danger of proliferation, are aimed at a much more precise description of the exports and their use, particularly the use of the goods by the recipient.

—The evaluation of the export declarations by the export control authorities, adopted by the Federal Government on 15 February 1989, was introduced with the fifth decree on the amendment to the foreign trade decree (Federal Law Gazette I, page 1749).

The evaluation will be carried out as of 1 April 1991 (Article 2 of the sixth decree to the amendment to the foreign trade decree of 20 March 1990—Federal Law Gazette I, page 554).

B. Laws

—With the fifth law on the amendment to the foreign trade law of 20 July 1990 (Federal Law Gazette, part I, page 1457), Section 34 of the foreign trade law was modified in a way that the range of punishment for violations of the foreign trade law was increased from a maximum of three years to 10 years. In addition, a mere threat to the security and the foreign relations of the FRG, as well as to the peaceful coexistence among the peoples will be punishable. A specific violation of the objects of legal protection is no longer required.

With the introduction of Section 7, Paragraph 3, a general legal basis has been created at the same time, which makes activities abroad by German citizens in connection with the development and production of weapons, ammunition, and military equipment subject to permission. This was applied with the eighth decree on changes in missile technology.

—With the sixth law on the amendment to the foreign trade law of 20 July 1990 (Federal Law Gazette, part I, page 1460) the maximum fine according to Section 33, Paragraph 5 of the foreign trade law was doubled from 500,000 German marks to 1 million to ensure a more efficient prosecution of violations of the foreign trade law. At the same time, a legal basis was created with Section 26a of the foreign trade law to make it binding for German enterprises to declare what they produce in the sphere of nuclear, biological, and chemical weapons, even if they do not plan any exports. Thus,

the export control system can also be applied to the area of potential illegal exports. A corresponding decree will soon be published.

- With the law on the improvement of the control of foreign trade and on the ban of nuclear, biological, and chemical weapons (it will enter into force before the end of November 1990 with its publication in the Federal Law Gazette), up to 15 years of imprisonment are provided for the particularly dangerous sphere of nuclear, biological, and chemical weapons. Under this law, activities by Germans abroad will be registered, and thoughtless, that is grossly negligent aiding and abetting are punishable. The minimum punishment for intentional activities is two years. Thus, criminal offenders can no longer expect suspended sentences.

II. Administrative Measures

- The improvement of the information basis of the authorities responsible for granting permissions, for control, and investigation in foreign trade through the mutual exchange of data, which was adopted by the Federal Government on 15 February 1989, has been achieved through amendments to the foreign trade law, financial administration law, and nuclear law. The corresponding regulations are contained in the law on the improvement of the control of foreign trade and on the ban on nuclear, biological, and chemical weapons, which will enter into force in October 1990, as well as in the sixth law on the amendment to the foreign trade law of 20 July 1990 (Federal Law Gazette I, page 1460, entered into force on 28 July 1990). Concerning the control of exports, the responsible ministries have agreed to intensify customs controls for exports to particularly critical countries.

In addition, the warning system with which the FRG Government tries to warn German industry against illegal acquisition attempts from abroad has been expanded. Since 1989, specific warnings have been issued in about 20 cases.

Finally, the FRG Government has considerably raised the number of foreign trade inspections.

While during the first half of 1989 144 inspections were made, which led to suspicions of violations of foreign trade law in 51 cases, the number of inspections during the first half of 1990 rose to as much as 442 with 145 cases of suspicion. In many of these cases the FRG Government turned to the public prosecutors' offices to further clear up the matter.

- With the decision of 11 April 1989 and within the framework of an addendum to the 1989 budget, the FRG Cabinet dealt with the budget preconditions for the increased expenditure in terms of personnel and material of the authorities responsible for approval and monitoring in foreign trade. The addendum to the budget was adopted by the Bundestag at the beginning of June 1989. The number of personnel dealing with export controls in the Federal Economic Office has

been tripled. In the Department VI of the Office, which deals with export controls, 108 new posts were established; thus, this department now has 168 employees. The personnel and material capacities of the authorities for approval and supervision will be expanded further.

In addition, the FRG Government has tightened regulations for permitting nuclear exports to nonnuclear states, which have not signed the Nonproliferation Treaty. Following a Cabinet decision of 9 August 1990, new and important nuclear exports to recipients in nonnuclear states, which are not partners to the Nonproliferation Treaty or the Treaty of Tlatelolco, are permitted only if the recipient countries have subjected all basic material, in particular fissionable material, to the safety measures of the International Atomic Energy Agency (IAEA) in Vienna. Existing obligations and permits are to be subjected to the new regulations within five years.

PORTUGAL

Mauritanian Missile Threat Issue Resurfaces

Experts' Insistence

90ES1332N Lisbon O JORNAL in Portuguese
14-20 Sep 90 p 2

[Article by Lurdes Feio, Filipe Luis, and Isabel Oneto]

[Text] Sources contacted by O JORNAL admit that there has been a new outbreak of activity by foreign espionage services in our country in recent weeks. The phenomenon is not unheard of in times of crisis, and it is said to be justified by the alleged vulnerability of the Portuguese intelligence services.

The same sources also acknowledge the risk that attacks against U.S. targets will be perpetrated by various special interest groups in various countries, including Portugal, and that, in some cases, those attacks may have no direct connection with the Iraqis. According to military and political circles, those attacks would be aimed at creating pretexts for a U.S. attack in the Gulf.

Our sources suggest that, in addition to such intelligence agencies as the CIA (United States) or MI-5 (Great Britain), other secret services such as Mossad (Israel's espionage agency), for example, are also probably interested in a maneuver of that kind. The reason is said to be Israel's fear that U.S. forces will abandon the Gulf a few months from now without first resolving the Iraqi problem. "On the day after the United States leaves, Saddam Husayn will be at Israel's door," say our sources, who vouch for the existence within Mossad's sphere of influence of Arab detachments trained especially to carry out operations of obscure origin.

Moreover, sources close to military circles share the opinion that President Bush would need a good pretext

for attacking Baghdad and that Husayn has been trying to eliminate all grounds for confrontation by yielding on a few strategic points.

"If the United States could attack, it would resolve the situation in three phases and would need only two days: It would begin with an air raid for the purpose of bombing strategic targets such as chemical weapons plants, missile launching bases, and a few military and petroleum storage facilities, and that would only take five minutes. Next would come 24 hours of air attacks on tanks and armor and, finally, another 24 hours in which ground forces would enter through Kuwait and attempt to push all the Iraqi troops in Kuwait back to the border," says the same source.

Missiles Aimed at Beja

But terrorism is not the only threat hanging over Portugal. According to military experts in strategy, the wave of reprisals that will be initiated by Baghdad against U.S. installations if there is war in the Gulf may include the launching of Iraqi missiles from Mauritania. Those missiles could penetrate Portuguese territory as far as the Grandola area without encountering any resistance, and, naturally, they would seriously endanger the base at Beja, where the Americans have facilities.

Recently published denials concerning the existence of Iraqi missiles in Mauritania are being viewed with skepticism by experts contacted by O JORNAL. Those experts say flatly that "there is no absolute proof that those missiles are not there or that they will not be installed there in the near future." They say: "The launch bases do, in fact, exist, and they are a real threat to the southern part of our country."

Our sources also say that North Africa represents a geopolitical threat to Portugal and that our country has no means of defense against possible attacks from that region. "The strategic concept of national defense must be revised," they argue. That same position was also defended in Parliament last Tuesday by Socialist leader Jaime Gama.

Incidentally, the vulnerability of Portuguese territory has constituted one of the arguments used by military sectors against the government in their support of greater Portuguese involvement in the Gulf. "The fact that we are contributing such a small and inefficient volume of forces and equipment is a national disgrace and does not give us an image of neutrality. To all intents and purposes, Portugal is present in the Gulf and may suffer reprisals because of that fact," say military sources.

Soares Carneiro's Special Platoons

Most of the Armed Forces hierarchy challenges the government for not responding affirmatively to President Bush's appeal to the allies to send ground reinforcements to the Gulf. The minister of defense was very clear on that point this week, when he flatly refused to send ground troops to the Gulf. Fernando Nogueira made that

statement before Parliament's Defense Committee. And another government source told O JORNAL that "the Portuguese Government's stand on this issue is final." Disagreeing with that decision, the military says that the country was fully capable of doing better. "We could have made three battalions of special troops available immediately, but we did not do so. On the other hand, the government has dispatched a perfectly useless platoon to Santa Maria Airport in the Azores. If there is an attack, that platoon will be nothing but cannon fodder because there are no antiaircraft defenses," we were told by one high-ranking military officer.

All indications are that the Armed Forces chief of staff himself, General Soares Carneiro, upheld similar positions in talks with the government, but without success. The feeling that finally prevailed in the government was that the uneasiness that would be generated in public opinion by sending Portuguese troops to the Gulf was more important than any need to mark out a position.

"Our voters are still traumatized by the colonial war and would not accept the idea of letting a single Portuguese soldier die in the Gulf. The government therefore restricted itself to respecting national public opinion, which, in a democracy, is stronger than any desire for military assertion," O JORNAL was told by a government source. With elections in sight, Cavaco refused to take a chance, and, while the Armed Forces did not appreciate that preoccupation with getting votes, they have gone along with the government's political decision.

Madeira Seen Target

90ES13320 Lisbon O JORNAL in Portuguese
21-27 Sep 90 p 2

[Text] O JORNAL has confirmed the existence of two SAM-class missile launchers and related equipment in Mauritania. They were supplied by Iraq at the end of 1989. We have also learned that the missiles are pointed at Madeira and Porto Santo, where an air base is available for use by the Americans. The missiles are located on the Atlantic coast between Nouadhibou and Nouakchott.

Military cooperation between Iraq and Mauritania began in 1987. It consists of training for Mauritanian officers in Iraq and Iraqi participation in joint exercises in Mauritania. Training in Mauritania has included practice exercises held on the Senegalese border, in the capital, and in Zouerate, the site of important iron mines on the border with Western Sahara.

Yemen and Sudan are the other countries where Iraq has military bases armed with missiles. Yemen's minister of foreign affairs, 'Abd al-'Aziz al-Dali, said recently in Rabat that he feared U.S. intervention to destroy those bases.

Saddam Husayn is strongly supported by the majority of the population in most North African countries,

including Morocco. In countries such as Algeria, Mauritania, Libya, Tunisia, Egypt, Jordan, and Syria—not to mention Sudan and Yemen—people's voices are being raised in opposition to the Western presence in the Gulf. Egypt, however, fears the growing strength of nationalists and Islamic fundamentalists, and last week Hosni Mubarak's government banned travel by the fundamentalist opposition's leaders to Amman, the capital of Jordan. For his part, the Egyptian president has made 1,000 apartments in Cairo available to Kuwaiti refugees.

SPAIN

Antinuclear Campaign Seeks Plant Closings

91WP0029A Madrid DIARIO 16 in Spanish
20 Oct 90 p 16

[Article by Mayte Antona]

[Text] Spain's leading ecology groups yesterday began a campaign to collect the 500,000 signatures needed to promote a referendum aimed at closing all nuclear power plants.

The campaign, coinciding with the first anniversary of the Vandellós I accident, includes demonstrations throughout Spain based on the slogan "Living Without Nuclear Plants."

Ladislao Martinez, spokesman for the Ecology Association for the Protection of Nature (AEDENAT), does not believe it is impossible to denuclearize Spain. "At the present time, there are six EEC countries that do not have nuclear power plants: Denmark, Italy, Greece, Luxembourg, Ireland, and Portugal," the AEDENAT spokesman explains. "For example, Denmark is the country with the highest per capita income in the EEC and also produces energy the most cheaply because it has implemented energy conservation plans that have operated successfully and looked to other alternative energy sources."

"In Italy," Martinez says, "there were nuclear power plants until 1987, when the Italian people decided in a popular referendum to do away with atomic plants. Italy is our model, our paradigm. If they have closed nuclear power plants by popular initiative, why can we not do the same in Spain?"

The ecology association Greenpeace, which is also participating in the campaign, already presented a report in 1987: "1992 Without Nuclear Power Plants," attempting to demonstrate that giving up nuclear energy is technically feasible and that the nuclear option is between eight and fifteen times more expensive than conservation measures.

Greenpeace believes the new National Energy Plan (PEN) should have energy conservation and efficiency and the development of renewable sources of energy as its basic priorities.

For its part, AEDENAT, which has carried out an alternative energy plan, is also betting on the promotion of energy conservation and renewable energy sources such as wind or solar power and the use of biomass, meaning the utilization of any organic waste that is a potential source of energy.

The areas of Spain where ecology movements hope to have the greatest success are Andalusia, Madrid, Catalonia, the Basque Country, Extremadura, and Asturias.

SWITZERLAND

Schmiedemeccanica Defends Iraq Delivery

91WP0014B Geneva JOURNAL DE GENEVE
in French 15 Sep 90 p 13

[Article: "Steel Delivery to Iraq: Schmiedemeccanica Rejects Accusations"]

[Text] Biasca—The Ticino firm Schmiedemeccanica in Biasca denies having provided Iraq with steel parts needed for the construction of uranium enrichment facilities and missiles. It claims that allegations broadcast on the Alemannian program "10 Vor 10" and published by various daily newspapers were based on sheer supposition and inaccurate technical data.

The two crates shipped by Schmiedemeccanica and confiscated by German authorities in Frankfurt last July contained cogwheels identical in construction and form to those the firm has delivered to numerous other clients, according to the Ticino-based company. The steel needed for manufacture of these parts was supplied by the client in Baghdad, a normal procedure when the quantity ordered is small, Schmiedemeccanica maintains.

The company said the steel was not subject to any import restriction, and the equipment shipped was forged in a conventional way in Biasca. It also claimed the steel was not treated thermically, the client having made no such request.

Finally, it said, the parts met the normal strength requirements for cogwheels used in machine construction. By contrast, the "maraging" steel mentioned by the media (which can be used, among other things, in nuclear installations) must be twice as strong. To get that strength, the steel must be treated thermically at special installations by experts, which is not feasible for the parts in question, according to Schmiedemeccanica.

TURKEY

Joint Argentine Firm To Sell Nuclear Reactors

TA0111160190 Ankara ANATOLIA in English
1530 GMT 1 Nov 90

[Text] Ankara (ANATOLIA)—Turkey and Argentina will set up a joint company to market small-sized nuclear power plants in the Third World, Turkish Atomic Energy Corporation Director Atila Ozmen said here on

Thursday. Disclosing the main lines of an agreement signed here last month, Ozmen said the planned reactors would have 25 megawatts capacity, and cost about 50 million dollars.

An advantage, he told ANATOLIA, is that the reactors would not entail dependency on big powers for fuel, since they use freely-available uranium enriched only to four percent.

By processing it, they provide further-enriched fuel for use in larger power plants, he added.

Ozmen said he foresaw good export prospects for the reactors, which, [word indistinct] to meet the electricity requirements of a town of 100,000, were ideally suited for developing countries which have big energy requirements and lack nationwide power grids.

Ozmen said the joint company, to be headquartered here, will be set up by next May and immediately start constructing the first power plant in Argentina. The work on an identical one in Turkey, likely to be constructed near here, will start in 1992 at the earliest and be completed in five years, he said.

After signing the nuclear nonproliferation treaty, Turkey negotiated with West German and Canadian firms for a 1000-megawatt plant. But the negotiations broke down over financing issues.

Civil Defense Against Iraqi Missiles Prepared

*NC1611210390 Istanbul HURRIYET in Turkish
13 Nov 90 p 16*

[Article by Kemal Saydamer]

[Text] Ankara, (HURRIYET)—Plans have been made to establish an "electronic siren system" in Turkey's "hot

region," which is made up of six provinces and which may be the target of Saddam Husayn's missiles if a war breaks out in the Gulf region. The first warning system was established in Batman. It has been ascertained that similar systems will be put into effect in Diyarbakir, Siirt, Sirnak, Mardin, and Hakkari.

According to the officials of the Directorate General of Civil Defense, remote controlled and computerized electronic siren systems have been put into effect in 16 sensitive locations in the other parts of Turkey in addition to the already existing "wired siren" systems. An effort is now being made to install similar systems in the six provinces in southeastern Anatolia, which have come to be known as the "hot region."

Meanwhile, plans are reported to have been drawn up to establish a VHF FM field radio system. As a first step, two mobile relay units, two field radios which can be mounted on vehicles, and 15 hand-held transceivers have been purchased for the civil defense unit in Ankara.

On the other hand, Interior Minister Abdulkadir Aksu has disclosed that in view of the crisis, stocks have been checked and shortages have been established. Aksu noted that 15,000 gas masks have already been purchased and that an effort is being made to acquire 1,000 pieces of protective clothing effective against chemical arms. He also disclosed that pharmaceutical drugs have been purchased for treating wounds inflicted by chemical arms.

Aksu disclosed that a "crisis center" has been established within the framework of the directorate general of civil defense. The center will coordinate work with the provinces around the clock. He also said that, in 1990, 83,497 draftees are being trained to broaden civil defense services.

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